STUDIES IN THE LAURACEAE. I[1]

CHINESE AND INDO-CHINESE SPECIES OF LITSEA, NEOLITSEA, AND ACTINODAPHNE

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For many years there has been a great deal of confusion among taxonomists regarding the treatment of the genera of the Lauraceae. The line of demarcation between some of the genera is so artificial as to be useless in grouping the species together as natural units. The present treatment is no exception as far as this point is concerned. Its scope is merely to place the various species, in so far as is possible at this time, in the genera into which they fall according to the artificial key given below. Inasmuch as only Chinese and Indo-Chinese material is considered, the key will hold. The study of the Indian species, which I hope to make eventually, will in all probability necessitate many more transfers, or perhaps even a revision of our concepts of the genera involved. Because this study is limited geographically, the sections which have been described will not be taken up at present. These will be treated at a later date.

In order to prevent any misunderstanding of terms, there are a few definitions which I deem it advisable to present.

By ''triplinerved,'' I mean that situation in which the midrib and the lowermost pair of nerves are three distinct entities, adnate 1–20 (or more) mm. above the base of the leaf.

The term ''minutely reticulate'' refers to that type of reticulation which approaches a subfoveolate condition.

In treating the Lauraceae the term ''umbellate'' has been very loosely applied to the inflorescence. There are no true umbels in this family. It should be understood that in the following pages, where the term ''umbel'' or ''umbellate'' is used, the actual condition is one approaching that. ''Subumbel'' and ''subumbellate'' rather should be used.

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An "induvium" such as is found in *Litsea baviensis (L. Maclurei)* and *L. Pierrei* is, according to B. D. Jackson's 'Glossary,' that portion of the corolla which persists in a withered condition at the base of the fruit. The interpretation of Gatin is the one used in the following pages, namely, an accrescent calyx or perianth which enlarges to almost completely enclose the fruit.

It is my great pleasure to dedicate this paper to Dr. J. M. Greenman, of the Missouri Botanical Garden, to whom I owe inspiration and encouragement as a student in Botany. For the co-operation in preparing it, I am indeed grateful to Dr. E. D. Merrill, Director, and Prof. Alfred Rehder, Curator, of the Arnold Arboretum. Thanks are due also to the curators of the herbaria of the following institutions for the generous loan of types and photographs of types: University of California, Gray Herbarium of Harvard University, Royal Botanical Gardens at Kew, Rijksherbarium at Leiden, New York Botanical Garden, Muséum National d'Histoire Naturelle at Paris, and Botanisches Institut der Universität at Vienna.

KEY TO THE GENERA

1. Fertile stamens 12; leaves usually penninerved.
  2. Bracts persistent until anthesis; fruits subtended by unchanged calyx tube, or one thickened or discoid; leaves usually non-verticillate........ ....*Litsea*, p. 362
  2. Bracts caducous before anthesis; fruit subtended by cyathiform calyx tube appendaged by residue of lobes; leaves usually verticillate........ ....*Actinodaphne*, p. 400
1. Fertile stamens 6; leaves 3-plinerved (usually) ....*Neolitsea*, p. 415

KEY TO THE SPECIES OF LITSEA

1. Leaves membranaceous and usually deciduous.
  2. Leaves orbicular or broadly ovate; petioles 3–5 cm. long.
    3. Leaves auriculate at base..................................1. *L. auriculata*
    3. Leaves not auriculate at base...........................2. *L. populifolia*
  2. Leaves not orbicular or broadly ovate; petioles less than 2 cm. long.
    3. Flowers 4–6 per umbel.
      4. Lower leaf-surface very softly pubescent; bark with turpentine-like odor..3. *L. mollifolia*
      4. Lower leaf-surface glabrous to somewhat pubescent; bark aromatic, not with turpentine odor.

5. Fruit globose, apiculate................................4. *L. euosma*
5. Fruit spherical, with no pronounced apicule............5. *L. Cubeba*
3. Flowers 7–12 (or more) per umbel.
4. Peduncles of inflorescence 1.5–3.5 cm. long................6. *L. Forrestii*
4. Peduncles of inflorescence less than 1.5 cm. long.
5. Young leaves covered with long yellowish or reddish brown sericeous pubescence.
6. Leaves oblong-lanceolate, acuminate...................7. *L. sericea*
6. Leaves obovate-elliptic, acute or obtuse, pubescence conspicuously persisting along midrib at maturity...............8. *L. Veitchiana*
5. Young leaves not covered with long yellowish or reddish brown sericeous pubescence.
6. Branchlets very long and seemingly pendulous, with very short floriferous side shoots..........................9. *L. moupinensis*
6. Branchlets not very long and not seemingly pendulous; numerous side branchlets up to 15 cm. long.
7. Flowers in anthesis before the appearance of leaves.
8. Leaves pubescent to glabrescent; fruit slightly more ellipsoid than globose............................10. *L. pungens*
8. Leaves glabrous; fruit globose..............11. *L. ichangensis*
7. Flowers in anthesis after the appearance of leaves.
8. Leaves obovate-oblong or elliptic-oblong..........12. *L. Chenii*
8. Leaves not obovate-oblong or elliptic-oblong.
9. Leaves less than 4.7 cm. long..................13. *L. Chunii*
9. Leaves always more than 4 cm. long.
10. Leaves 4–6 cm. long.....................14. *L. rubescens*
10. Leaves longer than 4–6 cm.
11. Leaves somewhat rounded; pedicels 7–8 mm. long ....14a. *L. rubescens* var. *yunnanensis*
11. Leaves 12–13 cm.; pedicels 9–10 mm. long...... ....14b. *L. rubescens* f. *tonkinensis*
1. Leaves not membranaceous and not deciduous as far as is known.
2. Leaves verticillate.
3. Leaves acutish or obtuse at base.
4. Leaves closely pubescent, margin never appearing ciliate; ultimate venation fine but not reticulate; umbels 5 mm. in diam......... ....15. *L. verticillata*
4. Leaves loosely covered with long rather silky pubescence, margin appearing ciliate; ultimate venation very loose; umbels 8 mm. in diam. ....15a. *L. verticillata* var. *annamensis*
3. Leaves rounded or subauriculate at base.
4. Fruit subsessile or very short-pedunculate........................ ....15b. *L. verticillata* var. *brevipes*
4. Fruit decidedly long-pedunculate...15c. *L. verticillata* var. *brevipetiolata*
2. Leaves not verticillate.
3. Leaves heavily coriaceous; mostly over 12 cm. long.
4. Inflorescence subumbellate.
5. Leaves obovate.................................16. *L. honghoensis*

5. Leaves not obovate.

6. Leaves over 25 cm. long.........................17. *L. grandifolia*

6. Leaves not over 22 cm.

7. Inflorescence subsessile or very short-pedunculate.

8. Leaves finely and pale-tomentose on lower surface, ferrugineous-tomentose on veins; fruit subtended by pubescent cupule not over 0.5 cm. deep...18. *L. Griffithii* var. *annamensis*

8. Leaves glabrous or subglabrous on lower surface.

9. Fruit subtended by shallow cupule 3–5 mm. deep, and 7 cm. broad, cupule sessile..................19. *L. Clemensii*

9. Fruit subtended by large verrucose cupule 2 cm. deep and 2 cm. broad, cupule pedunculate............20. *L. baviensis*

7. Inflorescence definitely pedunculate.

8. Leaves lanceolate or lanceolate-elliptic.

9. Leaves subtriplinerved..21a. *L. chartacea* var. *subtriplinervis*

9. Leaves penninerved.

10. Secondary veins 6–8 pairs at most, very dark against the glaucous lower surface of the leaf; leaves lanceolate-elliptic..........................21. *L. chartacea*

10. Secondary veins more than 10 pairs......22. *L. lancilimba*

8. Leaves elliptic or oblong-elliptic.

9. Largest leaves not under 15 cm...............23. *L. longipes*

9. Largest leaves not over 13 cm.

10. Lateral veins prominent below, nearly as prominent as midribs.................24. *L. Helferi* var. *laosensis*

10. Lateral veins obsolete or subobsolete; midrib very prominent..........................25. *L. eugenioides*

4. Inflorescence not subumbellate.

5. Largest leaves not less than 16 cm. long.

6. Largest leaves 23–25 cm. long........29a. *L. Pierrei* var. *grandifolia*

6. Largest leaves 16–20 cm. long.

7. Perianth 8-parted...............................26. *L. Liyuyingi*

7. Perianth 6-parted.

8. Inflorescence subtended by pedicels 4–5 mm. long, leaves oblanceolate.................20a. *L. baviensis* var. *szemaoïs*

8. Inflorescence subtended by pedicels 2 mm. long, leaves elliptic.....................................27. *L. Panamonja*

5. Largest leaves not more than 15 cm. long.

6. Fruit globose ....28. *L. Rehderiana*

6. Fruit not globose.

7. Inflorescence subtended by pedicels about 2 mm. long; fruit ellipsoid, 25 × 10–11 mm.; cupule never lobed......29. *L. Pierrei*

7a. Fruit ellipsoid-ovoid, 22 × 11–12 mm.; cupule often lobed ....29b. *L. Pierrei* var. *lobata*

7. Inflorescence subtended by pedicels 5–12 mm. long; leaves up to 15 cm. long.............................30. *L. cambodiana*

7a. Common peduncle 4 cm. long; leaves up to 10 cm. long.... ....30b. *L. cambodiana* var. *multiracemosa*

7b. Common peduncle 10 cm. long; leaves variable..............................30a. *L. cambodiana* var. *longiracemosa*
3. Leaves subcoriaceous; mostly less than 12 cm. long.
4. Leaves linear to linear lanceolate.
5. Inflorescence sessile..................................31. *L. Thorelii*
5. Inflorescence definitely pedunculate............32. *L. pseudoelongata*
4. Leaves not linear to linear-lanceolate.
5. Perianth incomplete or aborted; leaves, pedicels and branchlets heavily pubescent...............................33. *L. glutinosa*
5a. Leaves smaller, and always obtuse...33a. *L. glutinosa* var. *brideliifolia*
5. Perianth complete, 6 segments.
6. Leaves rotund to ovate to obovate or obovate-elliptic.
7. Leaves rotund, less than 4 cm. long............34. *L. rotundifolia*
7. Leaves not rotund, more than 4 cm. long.
8. Leaves obtuse or rounded at apex, occasionally short-acuminate or apiculate.
9. Leaves shining above, oval-oblong; petioles 1–1.5 cm. long.......................35. *L. firma* var. *austrannamensis*
9. Leaves dull above, obovate or obovate-oblong; petioles 1–2.4 cm. long..........................36. *L. monopetala*
8. Leaves acuminate at apex, acute at base.
9. Largest leaves under 11 cm. long.............37. *L. Wilsonii*
9. Largest leaves over 11 or usually 15 cm. long.
10. Stamens not exserted; leaves very attenuately acuminate, tending towards caudate, slightly falcate...38. *L. Garrettii*
10. Stamens greatly exserted...38a. *L. Garrettii* var. *longistaminata*
6. Leaves not rotund to ovate to obovate or obovate-elliptic.
7. Inflorescences crowded at the tips of branches.
8. Lateral veins ascending, mostly prominent (except in *L. Kobuskiana)*.
9. Umbels subsessile or short-pedunculate; peduncles 2–3 mm. long.
10. Bracts on outer surface canescent-sericeous at apex, shading to brown-pubescent at base.
11. Lateral veins very prominent; leaves obovate, pubescent below.........................39. *L. acutivena*
11. Lateral veins obscure; leaves oblong-elliptic or lanceolate, glabrescent to glabrous......40. *L. Kobuskiana*
10. Bracts pale brownish-pubescent............41. *L. Faberi*
9. Umbels pedunculate; peduncles 4–5 cm. long.
10. Leaves pubescent on lower surface........42. *L. elongata*
10. Leaves glabrous or extremely glabrescent on lower surface................42a. *L. elongata* var. *cuneifolia*
8. Lateral veins not ascending, but nearly horizontal, very obscure; leaves glaucous on lower surface......43. *L. hupehana*

7. Inflorescences not crowded at the tips of branches.
  8. Leaves 15 cm. or more long.
    9. Stamens very greatly exserted; leaves greyish-brown, pubescent on lower surface................44. *L. Dunniana*
    9. Stamens not exserted.
      10. Leaves and branchlets ferrugineous-pubescent...... ....45. *L. mekongensis*
      10. Leaves and branchlets glabrous to glabrescent...... ....46a. *L. viridis* var. *Clemensii*
  8. Leaves less than 12 cm. long.
    9. Inner pairs of bracts cano-sericeous; outer brown-pubescent; leaves very pale green................46. *L. viridis*
    9. Inner pairs of bracts not differentiated from outer.
      10. Leaves oblong-linear, narrowly or oblong-lanceolate; secondary venation obscure above; inflorescence short-racemose.......................47. *L. iteodaphne*
        10a. Leaves subacuminate; venation inconspicuous.... ....47a. *L. iteodaphne* f. *chinensis*
      10. Leaves not oblong-linear or oblong-lanceolate.
        11. Leaves oblanceolate, obtuse.
          12. Leaves usually less than 7 cm. long, glaucous and obscurely reticulate below.................. ....34a. *L. rotundifolia* var. *oblongifolia*
          12. Leaves more than 7 cm. long, variable in shape, not glaucous, but conspicuously reticulate below ....48. *L. variabilis*
        11. Leaves lanceolate or elliptic.
          12. Leaves somewhat membranaceous, glaucous...... ....48a. *L. variabilis* var. *oblonga*
          12. Leaves more coarse, less membranaceous.
            13. Leaves glabrous below........49. *L. Greenmaniana*
            13. Leaves pubescent below.
              14. Veins 6 or less pairs.
                15. Leaves greyish-glaucous or lightly pubescent below; brownish-pubescent on veins ....50. *L. lancifolia*
                  15a. Umbels pedunculate; peduncles 5–6 mm. long.....50a. *L. lancifolia* var. *pedicellata*
                15. Leaves not glaucous-pubescent below; pubescent on nerves at first, finally glabrous ....51. *L. Balansae*
              14. Veins more than 6 pairs; leaves and branchlets brown-tomentose below....52. *L. umbellata*

1. **Litsea auriculata** Chien & Cheng, Contr. Biol. Lab. Sci. Soc. China, **6**: 59, fig. 1. 1931.

DISTRIBUTION: known only from type locality.

CHINA. CHEKIANG: *S. S. Chien 601; W. C. Cheng 2348, 2349* (syntypes, Herb. Biol. Lab. Sci. Soc.; isotypes, AA); *S. Chen 518; W. C. Cheng 2152.*

A large-leaved *Litsea* with the auriculate-obovate leaves 17 × 13 cm. approximately, presenting an unmistakable diagnostic character. The most nearly related species is *Litsea cordata* Jack, from India, which is readily distinguished by its long-racemose inflorescence. *Litsea auriculata* Chien & Cheng resembles also *Actinodaphne confertiflora* Meissn. from India and from western China, which does not have auriculate leaf-bases and is minutely reticulate on both leaf-surfaces.

2. **Litsea populifolia** (Hemsl.) Gamble in Sargent, Pl. Wilson. **2**: 77. 1914; Liou, Laurac. Chine Indoch. 172. 1932.

Lindera obovata Franch. Nouv. Arch. Mus. Hist. Nat. Paris, sér. II. **10**: 76. 1887; Pl. David. **2**: 114. 1888.

Lindera populifolia Hemsl. Jour. Linn. Soc. Bot. **26**: 390. 1891.

Litsea longipetiolata Lecomte, Bull. Soc. Bot. France, **60**: 85. 1913; Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 88. 1913; Liou, Laurac. Chine Indoch. 172. 1932, **syn. nov.**

Benzoin obovatum (Franch.) Rehd. Jour. Arnold Arb. **1**: 145. 1919; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 42. 1925.

DISTRIBUTION: Tibet and western China.

TIBET. MOUPIN: *A. David* (type of *Lindera obovata* and syntype of *Litsea longipetiolata* not seen, Paris).

CHINA. YUNNAN: *J. M. Delavay 188, 5163* (syntypes of *Litsea longipetiolata,* Paris); *F. Ducloux 2110* (syntype of *L. longipetiolata,* Paris); *H. T. Tsai 51120, 52272.*—SZECHUAN: *E. Faber 55* (type of *Lindera populifolia,* Kew; isotype, NY); *F. T. Wang 22758; T. T. Yü 509, 534; W. P. Fang 2153, 2399.*

This species is characterized by large, up to 10 cm., orbicular or obovate leaves which have very long, up to 6 cm., slender petioles. Lecomte, in making the new combination under *Litsea,* proposed a new name since Nees had already published a *Litsea obovata* in reference to an entirely different plant. The differences between the types of *Litsea longipetiolata* and *L. populifolia* represent a degree of variation among individuals of the same species. There seems to be no valid character which separates the two.

3. **Litsea mollifolia** Chun, Sunyatsenia **1**: 236. 1934.

Litsea mollis Hemsl. Jour. Linn. Soc. Bot. **26**: 383. 1891; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 60. 1925; Liou, Laurac. Chine Indoch. 186. 1932; non *Litsea mollis* (Bl.) Boerl. in Handl. Fl. Ned. Ind. **3**: 141. 1900.

DISTRIBUTION: western and central China.

CHINA. HUPEH: *A. Henry 3177, 4434, 5035* (syntypes, Kew; isotypes, AA), *1026* (syntype not seen, Kew); *C. S. Fan & Y. Y. Li 187.*—KWEICHOW: *A. N. Steward, C. Y. Chiao & H. C. Cheo 349.*

The species is difficult to separate from *L. Cubeba* Pers. and *L. euosma* W. W. Sm. For complete discussion see the latter species.

4. **Litsea euosma** W. W. Sm. Notes Bot. Gard. Edinb. **13:** 166. 1921; Liou, Laurac. Chine Indoch. 187. 1932.

DISTRIBUTION: French Indo-China, Burma and western China.

CHINA. YUNNAN: *G. Forrest 9333, 7858, 15951* (syntypes, Edinburgh; isotypes, AA); *G. Forrest 12101, 17947* (syntypes not seen, Edinburgh); *J. F. Rock 7361, 7736; H. T. Tsai 54981, 56672, 56782.*

FRENCH INDO-CHINA. TONKIN: *E. Poilane 19135.*

A species very difficult to separate from *Litsea mollifolia* Chun and *L. Cubeba* Pers. The fruit of *Litsea euosma* W. W. Sm. is definitely globose apiculate, and the bark (according to the original description, and some of the dried specimens still retain it) has a lemon-like fragrance. The fruit of *L. Cubeba* is spherical, with no pronounced apicule, and the bark is reported to be aromatic, hence the name *L. citrata* Bl. applied to the specimen from Java. The type specimens of *L. mollifolia* have a turpentine-like odor; the fruit is subglobose with no apparent apicule; the leaves seem to be less attenuately acuminate at the apex than those of *L. euosma. Litsea Cubeba* is glabrous to glabrescent; *L. euosma* is somewhat pubescent; and *L. mollifolia* extremely softly pubescent. As for distribution, *Litsea Cubeba* is widespread in southern Asia and the adjacent islands. *Litsea euosma* is prevalent in western China, Siam, and Burma. *Litsea mollifolia* is found in central and western China, and possibly in the east-central provinces.

5. **Litsea Cubeba** (Lour.) Pers. Syn. **2:** 4. 1807; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 57. 1925; Rehd. Jour. Arnold. Arb. **11:** 157. 1930; Liou, Laurac. Chine Indoch. 184. 1932; Merr. Trans. Am. Philos. Soc. n. ser. **24:** 166 (Comm. Loureiro Fl. Cochinch.). 1935.

Laurus Cubeba Lour. Fl. Cochinch. **1:** 252. 1790; ed. 2, 310. 1793.

Litsea citrata Bl. Bijdr. 565. 1825; Hemsl. Jour. Linn. Soc. Bot. **26:** 379. 1891.

Litsea mollis Hemsl. var. *glabrata* Diels, Engler's Bot. Jahrb. **29**: 349. 1900.

Litsea mollifolia Chun var. *glabrata* (Diels) Chun, Sunyatsenia, **1**: 237. 1934, syn. nov.

For complete synonomy see Rehder, l.c.

DISTRIBUTION: India to China and Malaysia.

FRENCH INDO-CHINA. TONKIN: *J. Loureiro* (type not seen, Brit. Mus.); *A. Petelot 5569.*

CHINA. SZECHUAN: *F. T. Wang 22493, 23341; W. P. Fang 1069, 1199, 2186, 2213, 3065.*—YUNNAN: *A. Henry 11326, 11395, 12838; H. T. Tsai 50894, 51202, 51329, 51438, 51530, 51668, 51807, 54264, 55122, 55201, 55377, 58872, 59035, 59643, 59741, 60013, 60593, 62118.*—KWANGSI: *W. T. Tsang 22903, 21183, 21535, 21768; A. N. Steward & H. C. Cheo 2, 847, 727, 535.*—FUKIEN: *J. L. Gressitt 1716.* —KIANGSI: *S. K. Lau 4461, 3992.*—HAINAN: *F. C. How 70830, 71773; W. T. Tsang 187, 838; N. K. Chun & C. L. Tso 43730; C. Wang 33336, 34881, 35380; H. Y. Liang 63461, 64180, 64315, 64717, 66059.*

Many specimens more were seen but only a few of the numbers are cited above.

An extremely variable well-known species which is widespread, occurring throughout southern Asia and as far south as Java. It is often confused with *Litsea euosma* W. W. Sm. and *L. mollifolia* Chun. A detailed discussion is given under *L. euosma* W. W. Sm.

6. **Litsea Forrestii** Diels, Notes Bot. Gard. Edinb. **5**: 244. 1912; Liou, Laurac. Chine Indoch. 163. 1932.

DISTRIBUTION: western China.

CHINA. YUNNAN: *G. Forrest 374* (type not seen, Edinburgh).

Litsea Forrestii was described from immature specimens. Diels states that the species is easily recognized by the long peduncles of the inflorescence. The following numbers with these characteristically long peduncles are cited as possibly belonging to this species: from Yunnan, *J. F. Rock 8036, 8126; C. Schneider 4022;* from Kweichow, *J. Esquirol 738*[1]*;* from Kwangsi, *A. N. Steward & H. C. Cheo 12.*

7. **Litsea sericea** (Nees) Hook. f. Fl. Brit. Ind. **5**: 156. 1886; Chun, Contr. Biol. Sci. Soc. China, **1**^{5}: 60. 1925; Liou, Laurac. Chine Indoch. 186. 1932.

Tetranthera sericea Nees in Wall. Pl. As. Rar. **2**: 67. 1831.

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[1] **Litsea** spec. Allen, Jour. Arnold Arb. **17**: 330. 1936.

Lindera Esquirolii Lévl. Fedde, Rep. Spec. Nov. **9**: 327. 1911; Fl. Kouy-Tchéou, 219. 1914, as synonym of *Lindera praecox* Bl.

DISTRIBUTION: India and western China.
INDIA. NEPAL: *N. Wallich 2545A*[1] (isotype, Kew, NY).
CHINA. SZECHUAN: *T. T. Yü 489.*

A species often confused with *Lindera umbellata* Thunb. in the fruiting stage, but distinguished by the glabrous or nearly glabrous winter buds; the more chartaceous leaves finely but distinctly reticulate below, less so above; and by the smaller fruits only 4–5 mm. long, borne on very slender pedicels.

8. **Litsea Veitchiana** Gamble in Sargent, Pl. Wilson. **2**: 76. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 59. 1925; Liou, Laurac. Chine Indoch. 182. 1932.

DISTRIBUTION: western China.
CHINA. SZECHUAN: *Veitch Exped. 4426; E. H. Wilson 3672* (syntypes, AA).

It is my opinion that the two specimens cited above are not conspecific. The color of the pubescence is different. *No. 4426* has long ferrugineous pubescence; *no. 3672* has light tawny pubescence. The veins of *no. 3672* are straight, evenly pinnate, those of *no. 4426* are crooked and irregularly pinnate. The leaf shape in general of *no. 3672* is the more lanceolate of the two. Liou has seen a ♂ specimen that is a satisfactory match *(Chen no. 5839)* for the species. He does not mention leaf characters in his description, so it is not clear which of the syntypes the latter matches. Until more abundant material comes in from Yunnan, I will merely call attention to the apparent dissimilarity between the two specimens cited as types.

9. **Litsea moupinensis** Lecomte, Bull. Soc. Bot. France, **60**: 84. 1913; Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 88. 1913; Liou, Laurac. Chine Indoch. 187. 1932.

Lindera puberula Franch. Pl. David. **2**: 115. 1887; Nouv. Arch. Mus. Hist. Nat. Paris. sér. II. **10**: 77. 1887.

Benzoin puberulum (Franch.) Rehd. Jour. Arnold Arb. **1**: 145. 1919; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 41. 1925.

DISTRIBUTION: Tibet and western China.
TIBET. MOUPIN: *A. David* in 1869 (type, Paris).
CHINA. YUNNAN: *F. Ducloux 4508; P. Farges 617* (syntypes not seen, Paris).

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[1] I have not seen any of the Wallich specimens which are the types of Nees' species treated in the present paper. However, I have borrowed the isotypes from Kew. At the death of Nees, the latter's herbarium was divided and sold. The Laurineae became a part of the Zschok herbarium which at that time was somewhere in Austria.

Franchet states that *Lindera puberula* Franch. is similar to *Lindera Griffithii* Meissn. and *Lindera sericea* Bl., differing, however, in the adult branches being covered with a very fine close pubescence. This is another case where it is practically impossible to match the ♂ and ♀ specimens. It is my belief that some of the fruiting specimens of *Lindera umbellata* Thunb., reported from Yunnan and Szechuan, are not linderas but belong to *Litsea moupinensis* Lecomte. I have seen in no collection from the western provinces of China a ♂ specimen of *Lindera umbellata.* Plenty have been collected from Japan and from eastern and even northern China. This discrepancy must eventually be accounted for, and it may be that the above suggestion will be the solution. When Lecomte recognized the above plant as a *Litsea,* he had to adopt a new name because of the earlier *Litsea puberula* Miq.

10. **Litsea pungens** Hemsl. Jour. Linn. Soc. Bot. **26**: 384. 1891; Gamble in Sargent, Pl. Wilson. **2**: 76. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 59. 1925; Liou, Laurac. Chine Indoch. 186. 1932.

DISTRIBUTION: western and central China.

CHINA. HUPEH: *A. Henry 230, 1302* (syntypes not seen, Kew), *3617, 3617B, 6294* (syntypes, Kew; isotypes, Gray); *H. C. Chow 372, 583.*—SZECHUAN: *A. Henry 5579* (syntype not seen, Kew).—KWEICHOW: *A. N. Steward, C. Y. Chiao & H. C. Cheo 35.*

A species distinctive because of the fine texture of the elliptic leaves and the very small (3 mm. diam.) globose fruit, subtended by a calyx scarcely enlarged.

11. **Litsea ichangensis** Gamble in Sargent, Pl. Wilson. **2**: 77. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 58. 1925; Liou, Laurac. Chine Indoch. 180. 1932.

DISTRIBUTION: known only from type locality.

CHINA. HUPEH: *E. H. Wilson 297; Veitch Exped. 34* (syntypes not seen, Kew); *E. H. Wilson 298* (syntype, Kew; isotype AA).

The species resembles the Genus *Cinnamomum* in the frequent occurrence of glands in the axils of the veins on the under surfaces of the leaves, and in the spicy lemon-like odor of the bark and leaves. The latter are ovate, obtuse and very small, usually under 4 cm. long.

12. **Litsea Chenii** Liou, Laurac. Chine Indoch. 183. 1932.

DISTRIBUTION: known only from type locality.
CHINA. SZECHUAN: *S. Chen 7091* (type not seen, Paris).

Liou states that this species is similar to *Litsea rubescens* Lecomte but differs in the disposition of the anthers of the third cycle of stamens, the pubescent filaments, the larger leaves which are pubescent below, and the more numerous secondary nerves. He states also that it is near *Litsea mollifolia* Chun, but has solitary, larger umbels, larger leaves, etc.

13. **Litsea Chunii** Cheng, Contr. Biol. Lab. Sci. Soc. China, **9**: 196, fig. 19. 1934.

DISTRIBUTION: known only from type localities.
CHINA. SZECHUAN: *W. C. Cheng 672* (syntype not seen, Fan Mem. Inst. Biol. ?).—SIKIANG: *W. C. Cheng 1173* (syntype not seen, Fan Mem. Inst. Biol. ?); *W. C. Cheng 924, 926* (paratype, Fan Mem. Inst. Biol.).

Chen places this species near *Litsea pungens* Hemsl., from which it differs in the usually smaller elliptic-lanceolate leaves almost glabrous beneath, even when young; in the oblong or ovate-oblong perianth lobes and glabrous stamens; and in the ovoid fruit. I have seen no representative of this species.

14. **Litsea rubescens** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 86. 1913; Liou, Laurac. Chine Indoch. 183. 1932.

DISTRIBUTION: western China.
CHINA. KIENT CHANG: *A. F. Legendre 1385* (type not seen, Paris).

14a. **Litsea rubescens** Lecomte var. **yunnanensis** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 86. 1913; Liou, Laurac. Chine Indoch. 183. 1932.

DISTRIBUTION: western China.
CHINA. YUNNAN: *J. M. Delavay 4020* (type, Paris).—SZECHUAN: *W. P. Fang 808*.—KWEICHOW: *W. Y. Chun 7338*.

Both the species and the variety are characterized by the buds being extremely apiculate before anthesis. The variety has round leaves that are longer than those of the species. The leaves of the species are 4–6 cm. long, 1.7–2.2 cm. broad.

14b. **Litsea rubescens** Lecomte f. **tonkinensis** Liou, Laurac. Chine Indoch. 183. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. TONKIN: *E. Poilane 12625* (type not seen, Paris).

This differs from var. *yunnanensis* in having longer leaves and longer fruiting pedicels.

15. **Litsea verticillata** Hance, Jour. Bot. **21**: 356. 1883; Hemsl. Jour. Linn. Soc. Bot. **26**: 386. 1891; Chun, Contr. Biol. Lab. Sci. Soc. China, 1^5: 65. 1925; Liou, Laurac. Chine Indoch. 171. 1932; Merr. Lingnan Sci. Jour. **16**: 190. 1937.

Litsea multiumbellata Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 85. 1913; Fl. Gén. Indoch. **5**: 133. 1914; Liou, Laurac. Chine Indoch. 171. 1932.

Litsea brevipetiolata Lecomte, Fl. Gén. Indoch. **5**: 132. 1914, pp.

DISTRIBUTION: French Indo-China to China.

CHINA. KWANGTUNG: *B. C. Henry, Herb. Hance 22051* (type of *Litsea verticillata*, Brit. Mus.); *C. O. Levine 359*.—HAINAN: *S. K. Lau 1502, 2581, 3828; H. Fung 20407; H. Y. Liang 62626, 62149, 63520.* Numerous other collections have been examined.

FRENCH INDO-CHINA. TONKIN: *D. Bois 230* (syntype of *Litsea brevipetiolata*, Paris).—CAMBODIA: *L. Pierre 643* (type of *Litsea multiumbellata*, Paris; isotype, AA).

This species is extremely variable in leaf structure and in inflorescence. Typical *Litsea verticillata* has branchlets densely ferrugineous-hirsute, finally glabrous; leaves verticillate, penninerved, subsessile, lanceolate or lanceolate-oblong, base obtuse, apex gradually acuminate, hirtellous to glabrous above, venation ferrugineous-hirtellous below, bracts of inflorescence cano-sericeous on the outside. These characters are all variable: the degree which the leaves are sessile, the leaf base, the leaf shape, venation and pubescence, and the length of the pedicels of the inflorescence. There is an intergradation of all of these, also, to be found on an examination of numerous herbarium specimens. The following varieties which have been retained represent the extremes of variation within the species.

15a. **Litsea verticillata** f. **annamensis** (Liou), comb. nov.

Litsea multiumbellata Lecomte f. *annamensis* Liou, Laurac. Chine Indoch. 171. 1932.

DISTRIBUTION: French Indo-China and China.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 7547* (type, Paris; photo., AA).
CHINA. YUNNAN: *H. T. Tsai 61180, 61379, 61501, 61613.*

It is with some hesitation that I have included the Yunnan specimens under this variety, since I have only the photograph of the type for comparison. The leaves of the former seem to be on the whole rather more acuminate, and the umbels somewhat shorter in several cases. The venation and pubescence, as far as can be judged, agree with the variety. Liou gives as a diagnostic character the size of the umbels as 8 mm. before anthesis. This increase in size seems to be prevalent in the *verticillata* group, and does not therefore have a great deal of value as a varietal character. The number of flowers, which he gives as five, is variable also. Likewise, leaf-length varies. The very loose reticulation is a distinctive character.

15b. **Litsea verticillata** var. **brevipes** Merr. & Metc. in Lingnan Sci. Jour. **16**: 81. 1937.

DISTRIBUTION: China.

CHINA. KWANGTUNG: *W. T. Tsang 16602* (type, Lingnan U.; isotype, NY).

This is very similar to var. *brevipetiolata* (Lecomte) Allen in that the leaf bases are the same. The inflorescence, however, is sessile.

15c. **Litsea verticillata** Hance var. **brevipetiolata** (Lecomte), comb. nov.

Litsea brevipetiolata Lecomte, Fl. Gén. Indoch. **5**: 132. 1914, pp.; Liou, Laurac. Chine Indoch. 172. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. TONKIN: *H. Bon 3311* (syntype, Paris); *Mouret, B. Balansa* (syntypes not seen, Paris); *W. T. Tsang 23038?* (differs from the type in having a less dense pubescence).

I have seen only two of the four types on which Lecomte based his description of *L. brevipetiolata. Bon No. 3311,* I take to be typical. *Bois No. 230,* also from Tonkin, is a typical *Litsea verticillata* described from Kwangtung. The petioles vary in length, and the leaves are acute at the base, with the typical under-surface, venation and pubescence typical of the latter species. In *Litsea brevipetiolata* the leaves are rounded at the base, abruptly contracted or subauriculate, and in *L. verticillata,* obtuse or sometimes subrotund.

16. **Litsea honghoensis** Liou, Bull. Soc. Bot. France, **80**: 567. 1933.

Litsea wenshanensis Hu, Bull. Fan Mem. Inst. Biol. **5**: 308. 1934; Hu in Hu & Chun, Ic. Pl. Sin. **4**: 10, pl. 160. 1935, **syn. nov.**

DISTRIBUTION: China (Yunnan).

CHINA. YUNNAN: *H. T. Tsai 51726* (type of *Litsea wenshanensis,* Fan Mem. Inst. Biol.; isotype, AA), *51502, 51555* (paratypes of *Litsea wenshanensis,* Fan Mem. Inst. Biol.; isotypes, AA); *A. Henry 10856A* (type of *L. honghoensis* Liou, NY; isotype, AA).

This Yunnan species is distinguished by its large (10–13 cm. long × 4–6 cm. broad), coriaceous, oblong-elliptic to obovate leaves, yellow-green above, glaucous below, the veins red to yellow. The inflorescence consists of numerous fascicled or solitary umbels.

Liou, in 1933, has tentatively described *Litsea ? honghoensis.* He has only ♀ flowers. He gives no collector. The title indicates that the species is from Yunnan. By chance, I found the type specimen so labeled in the N. Y. Herb. There is no difference apparent between the two species *L. honghoensis* and *L. wenshanensis,* the latter automatically falling into synonymy under the former.

17. **Litsea grandifolia** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 87. 1913; Fl. Gén. Indoch. **5**: 141. 1914; Liou, Laurac. Chine Indoch. 175. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. COCHINCHINA: *L. Pierre 5149* (type, Paris).

This seems to be near *Litsea baviensis* Lecomte, or its variety *szemaoïs* (Liou) Allen, but the leaves are much larger, and the fruit is borne in clusters on a longer peduncle.

18. **Litsea Griffithii** Gamble var. **annamensis** Liou, Laurac. Chine Indoch. 193. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 10524, 16581* (syntypes, Paris); *J. & M. S. Clemens 4242.*—TONKIN: *E. Poilane 13132* (syntype, Paris).

Both the species and the variety are very striking plants with large coriaceous elliptic leaves 10–15 cm. in length, 5–8 cm. broad, greenish yellow above, very pale below, lightly covered with reddish pubescence, the veins ascending-arcuate and densely ferrugineous-tomentose. The branchlets and petioles also are densely appressed-tomentose. The differences between the species and the variety as given by Liou seem to be differences in degree of variation. Without examining all of the specimens cited both for the species and the variety, the true status of the variety in relation to the species cannot be ascertained.

19. **Litsea Clemensii**, spec. nov.

Arbor parva, ramulis teretibus rubescentibus striatulis ex pubescentibus glabrescentibus. Folia opposita, satis coriacea, oblongo-elliptica, 12–20 cm. longa, 4–5.5 cm. lata, acuta vel acuminata, supra inconspicue subtus prominenter reticulata, ex glabrescentibus glabra, margine laxe undulata, penninervia, nervis 8–10 arcuatis, supra inconspicuis subtus elevatis, petiolis 8–22 mm. longis, glabrescentibus. Inflorescentia subumbellata, solitaria, pauciflora, axillaris vel subterminalis, breviter pedunculata. Flores ♂ et ♀ ignoti. Fructus late ellipsoideus, 10 mm. longus, 8 mm. latus, cupula 3–4 mm. longa, 6–8 mm. lata, pateriformi, matura utrinque glabra sessili.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. ANNAM: *J. & M. S. Clemens 3268* (type, AA).

The sessile subumbels, of which only 1 or 2 flowers develop into mature fruit, present an unusual appearance. For the most part, two mature fruits are seen side by side at maturity.

This species is named for the late Chaplain and Mrs. Clemens who have contributed largely to our Indochinese collections.

20. **Litsea baviensis** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 87. 1913; Fl. Gén. Indoch. **5**: 142. 1914; Liou, Laurac. Chine Indoch. 176. 1932.

Litsea Maclurei Merr. Philip. Jour. Sci. **23**: 244. 1923; Liou, Laurac. Chine Indoch. 178. 1932, **syn. nov.**

DISTRIBUTION: China and French Indo-China.

FRENCH INDO-CHINA. TONKIN: Mont Bavi, *B. Balansa 2401* (type of *L. baviensis*, Paris; photo. and fragm., AA).—ANNAM: *E. Poilane 22073, 23750.*

CHINA. HAINAN: *F. A. Maclure 9586* (type of *L. Maclurei*, Herb. Manila; isotype, AA); *H. Fenzel 90; W. T. Tsang & H. Fung 575, 619; W. T. Tsang 692; S. K. Lau 1620, 2927, 3600, 3861; F. C. How 70389, 72160; H. Y. Liang 62439, 64288, 64910; C. Wang 33535, 33541, 34315, 35289.*

The above-mentioned species is characterized by coriaceous, oblong or lanceolate leaves up to 20 cm. long, yellow-green above and glaucous below. The black glabrous fruit is enclosed in a large fleshy, greyish truncate verrucose cupule or induvium which is glabrous. Liou suggests the similarity of the two species but keeps them distinct because of more visible veins on the lower surface of *L. baviensis* Lecomte, and its longer peduncles. I have the types of both before me, and the differences do not seem important enough to warrant retaining them as separate species.

20a. **Litsea baviensis** Lecomte var. **szemaoïs** (Liou), comb. nov.

Litsea Pierrei Lecomte var. *szemaoïs* Liou, Laurac. Chine Indoch. 174. 1932.

DISTRIBUTION: known only from type locality.

CHINA. YUNNAN: Szemao, *A. Henry 12025* (type of *L. Pierrei szemaoïs*, NY; isotype, AA).

Liou mentions the similarity of the variety to *Litsea Maclurei* Merr. (now *L. baviensis* Lecomte), which seems to be a nearer relation than *L. Pierrei* Lecomte. The leaf characters certainly do not resemble those of the latter. The inflorescence of *L. baviensis* Lecomte is fasciculate while in the variety *szemaoïs* Liou, it is of a racemose type. The latter, however, is quite distinct from that of *L. Pierrei* Lecomte, the raceme of which breaks up into numerous individual flowers. In the variety, the ultimate branchlets consist of several-flowered umbels. Of the two types of inflorescence, the latter has a closer affinity to the fascicle than the racemose type of *L. Pierrei* Lecomte. For these reasons, the variety has been transferred to *L. baviensis* Lecomte.

21. **Litsea chartacea** (Nees) Hook. f. Fl. Brit. Ind. **5**: 170. 1886.

Tetranthera chartacea Wall. ex Nees in Wall. Pl. As. Rar. **2**: 67. 1831; **3**: 30. 1832.

Litsea Eberhardtii Liou, Laurac. Chine Indoch. 181. 1932, **syn. nov.**

Litsea baviensis Lecomte var. *venulosa* Liou, Laurac. Chine Indoch. 177. 1932, **syn. nov.**

DISTRIBUTION: India through French Indo-China to western China.

INDIA. NEPAL: *N. Wallich 2531* (isotype of *Tetranthera chartacea,* Kew, see footnote, p. 370).—E. HIMALAYA: *W. Griffith 4292.*

FRENCH INDO-CHINA. TONKIN: *P. Eberhardt 4950* (type of *Litsea Eberhardtii,* Paris; photo., AA); *E. Poilane 13117.*—ANNAN: *E. Poilane 10697* (type of *Litsea baviensis* var. *venulosa,* Paris; photo., AA).

CHINA. YUNNAN: Szemao, *A. Henry 12013.*

Although the photograph alone of *Litsea Eberhardtii* Liou is at hand there seems no doubt that this plant is conspecific with *Litsea chartacea* from Nepal. The type of *Litsea baviensis* Lecomte var. *venulosa* Liou agrees perfectly with the latter. The question of reticulation, which does not show in detail in the photograph, is not mentioned in the description of *L. Eberhardtii,* but the type of *L. Eberhardtii* var. *subtriplinervis* Liou shows a reticulation similar to that of *L. chartacea* (Nees) Hook. f. It seems a reasonable assumption that a like situation obtains in the species proper. *Poilane 13117,* from Tonkin, cited by Liou under *Litsea baviensis* Lecomte, is a fruiting specimen showing no similarity to the fruit of the latter. The leaves in every respect correspond to those of *L. chartacea.* Both the type of *L. Eberhardtii* Liou, and Poilane's fruiting specimen were collected in the vicinity of Hanoi, Tonkin; the former in the province of Vinh-yen, to the north, the latter near Chobo, to the southwest.

21a. **Litsea chartacea** (Nees) Hook. f. var. **subtriplinervis** (Liou), comb. nov.

Litsea Eberhardtii Liou var. *subtriplinervis* Liou, Laurac. Chine Indoch. 181. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. TONKIN: *P. Eberhardt 4949* (type of *Litsea Eberhardtii* var. *subtriplinervis,* Paris; photo. and fragm., AA).

The affinity between the species proper and the variety is very evident on examination of the types, the distinguishing character being an approach to a triplinerviate condition at the leaf bases.

22. **Litsea lancilimba** Merr. Philip. Jour. Sci. **23**: 244. 1923; Liou, Laurac. Chine Indoch. 176. 1932.

DISTRIBUTION: French Indo-China (?) and southern China (Hainan).

CHINA. HAINAN: *F. A. McClure (C.C.C.) 9353* (type, Herb. Manila; photo., AA); *F. C. How 73219; N. K. Chun & C. L. Tso 44354; C. Wang 35362; H. Y. Liang 64800.*

I have seen no flowers of this species. The leaves are very striking, long-lanceolate, acuminate, more or less glaucous below, and green above. Liou reports this as occurring in French Indo-China, but I have found no specimen of it in the material I have examined.

23. **Litsea longipes** (Meissn.) Hook. f. Fl. Brit. Ind. **5**: 172. 1886; Lecomte, Fl. Gén. Indoch. **5**: 141. 1914; Liou, Laurac. Chine Indoch. 175. 1932.

Cylicodaphne longipes Meissn. in DC. Prodr. 15^1: 205. 1864.

DISTRIBUTION: India and French Indo-China.

INDIA. MERGUI: *W. Griffith* (type, Kew); *Helfer, Kew Distrib. No. 4281* (cited by Hooker f.).

Lecomte has reported this from Indo-China, but I have seen no specimens from there. The species has very distinctive fruit when dried, borne in pedunculate umbels of threes, the cupule being 1.5 cm. in diam., very fleshy, and the pedicel 3 cm. long. On drying the cupule appears rugose. The leaves are large (20 × 8 cm.), coriaceous, elliptic, yellow-green above, glaucous below. Except for the numbers cited above, I have seen no material of *L. longipes.*

24. **Litsea Helferi** Hook. f. var. **laosensis** Liou, Laurac. Chine Indoch. 180. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. LAOS: *E. Poilane 2086* (type, Paris).

There does not appear to be a very close relationship between the two entities. Liou emphasizes the fact that in the variety the umbels are larger; the leaves are larger and more coriaceous; the petioles are longer; the secondary nerves are impressed above, but show a slight elevation as well. These differences would be variations of degree only, if the plants were similar in other respects, which is not the case. The leaves of the variety are not symmetrical in outline, while those of the species proper are usually elliptical-ovate.

25. **Litsea eugenioides** A. Chev. in Liou, Laurac. Chine Indoch. 173. 1932.

DISTRIBUTION: known only from type locality?

FRENCH INDO-CHINA. ANNAM: *A. Chevalier 38667; E. Poilane 3658* (syntypes, Paris).

These two numbers constitute the only material seen of this species. The nearest related species seems to be *Litsea nitida* (Nees) Hook. f. from India. The unusual raised venation is characteristic of both species. The ♂ inflorescence of the latter is a full-flowered raceme. The ♀ inflorescence is shorter. The ♂ inflorescence of *L. eugenioides* is unknown; the ♀ inflorescence is a short axillary cluster of umbels or merely isolated umbels. The leaves of *L. nitida* are longer and more slender, and the venation less conspicuous on the lower surface than those of *L. eugenioides.* It is possible that there is one species only represented here, but I have for study only a portion of Wallich's type of *Tetranthera nitida* consisting of a ♂ branch. Before making any change of status more material is necessary.

26. **Litsea Liyuyingi** Liou, Bull. Soc. Bot. France, **80**: 566, fig. 1. 1933.

DISTRIBUTION: known only from type locality.

CHINA. YUNNAN: *A. Henry 12839* (type, NY).

Liou has created, on the strength of this species, a new subgenus *Octolitsea,* because of the numerous stamens and the eight-parted perianth. It is a coarse-leaved species not unlike *L. honghoensis,* but differing from it in having an inflorescence of panicles of cymes.

27. **Litsea Panamonja** (Nees) Hook. f. Fl. Brit. Ind. **5**: 175. 1886; Liou, Laurac. Chine Indoch. 175. 1932.

Tetranthera Panamonja Hamilt. in Wallich List No. 2553. 1830.
Tetranthera Panamanja Nees in Wall. Pl. As. Rar. **2**: 67. 1831.

DISTRIBUTION: India and French Indo-China.

INDIA. SILHET: *N. Wallich 2553* (isotype, Kew, not seen; Gray, see footnote p. 370).

FRENCH INDO-CHINA. TONKIN: *P. Eberhardt 3241.*

A large-leaved penninerved species distinguished by its numerous racemes often 6 cm. long.

28. **Litsea Rehderiana**, spec. nov.

Arbor 15–18 m. alta, ramulis teretibus rugosis viridi-brunneis, glabris. Folia in apice ramulorum verticillata, subcoriacea, elliptica, 12–17 cm. longa, 4–6.5 cm. lata, acuta, acuminata vel subacuminata ad basin subrotundata, utrinque glabra, supra viridia, minute reticulata sub lente, subnitida, subtus pallida, glaucescentia, penninervia, nervis 7–9-jugis, supra pro ratione laminae coloris perspicuis sicut venulis flavis, subtus primo intuito obscurioribus sed prominulis, petiolis 12–30 mm. longis, glabris rugosis. Inflorescentia coarctata, racemosa, umbellam simulans. Flores ♂ immaturi, ut videtur generis, staminibus 9. Flores ♀ ignoti. Inflorescentia fructifera, 3–3.5 cm. longa, pedicellis 1–1.5 cm. longis. Fructus magnus, globosus, 2 cm. latus, rugosus, cupula glabra in sicco, 5–7 mm. longa, 10–12 mm. lata, in pedicellum clavatum 16–20 mm. longum et 4–6 mm. crassum, abrupte abeunte.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 24353, 23907* (type, Paris; photo. and fragm., AA).

A very striking species of *Litsea* on account of the enormous globose fruits which are borne in racemose clusters on the branches and are subtended by a thick enlarged calyx and pedicel, together forming a constricted funnel-shaped cupule. The reticulation of the upper surface of the leaf is unusual in that under a lens it appears yellowish, as do the veins, against the dark background of the leaf blade.

It gives me great pleasure to name this species in honor of Prof. Alfred Rehder, Curator of the Herbarium of the Arnold Arboretum, long renowned as an authority on oriental ligneous plants.

29. **Litsea Pierrei** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 83. 1913; Fl. Gén. Indoch. **5**: 138. 1914; Liou, Laurac. Chine Indoch. 174. 1932.

Litsea Vang Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 84. 1913; Fl. Gén. Indoch. **5**: 139. 1914; Liou, Laurac. Chine Indoch. 175. 1932, syn. nov.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. COCHINCHINA: *L. Pierre 471, 5151* (syntypes of *Litsea Pierrei*, Paris); *L. Pierre 125* (type of *Litsea Vang*, Paris).

This is a species where the ovary is almost completely enclosed in the enlarged perianth tube or induvium, which in the young fruiting stage enlarges to almost surround the fruit. In the mature stage, the fruit protrudes from the spread calyx about one-half its length. This situation is comparable to that found in *Litsea baviensis* Lecomte from which *L. Pierrei* is distinguished by the smaller leaves, non-verrucose calyx and oblong fruit. It seems to be a difference in the age of the fruiting specimens which separates the two species of Lecomte, *L. Pierrei* and *L. Vang.* Hence, I have reduced the latter to *L. Pierrei* Lecomte.

29a. **Litsea Pierrei** Lecomte var. **grandifolia** (Lecomte), comb. nov.

Litsea Vang Lecomte var. *grandifolia* Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 84. 1913; Fl. Gén. Indoch. **5**: 139. 1914; Liou, Laurac. Chine Indoch. 165. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. CAMBODIA: *L. Pierre 5152* (type, Paris).

This is a very large-leaved variety of the species.

29b. **Litsea Pierrei** Lecomte var. **lobata** (Lecomte), comb. nov.

Litsea Vang Lecomte var. *lobata* Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 84. 1913; Fl. Gén. Indoch. **5**: 139. 1914; Liou, Laurac. Chine Indoch. 165. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. CAMBODIA: Ile Phu-Quoc, *L. Pierre 5150* (type, Paris).

The species and the variety are very similar. The lobing of the cupule mentioned by Lecomte is not apparent on the sheet of the type at hand. The fruit of the variety is more broadly oblong than the fruit of the species. The leaves of the variety are more cuneate at the base and the venation more apparent on the upper surface. Otherwise, the two entities are similar.

30. **Litsea cambodiana** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 82, pl. 5. 1913; Fl. Gén. Indoch. **5**: 139, fig. 12. 1914; Liou, Laurac. Chine Indoch. 172. 1932.

DISTRIBUTION: French Indo-China.
FRENCH INDO-CHINA. CAMBODIA: *Bordenave* (type, Paris).

A coarse species which is distinctive because of the extremely coriaceous leaves, which are truly elliptical, 10–15 cm. long and 4.5–7.5 cm. broad, penninerved, with nerves conspicuous only below, spreading and ascending at the tips. The inflorescence is racemose.

30a. **Litsea cambodiana** Lecomte var. **longiracemosa** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 82. 1913; Fl. Gén. Indoch. **5**: 141. 1914; Liou, Laurac. Chine Indoch. 173. 1932.

DISTRIBUTION: French Indo-China.
FRENCH INDO-CHINA. COCHINCHINA: *L. Pierre 229* (type, Paris).

30b. **Litsea cambodiana** Lecomte var. **multiracemosa** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 82. 1913; Fl. Gén. Indoch. **5**: 141. 1914; Liou, Laurac. Chine Indoch. 173. 1932.

DISTRIBUTION: French Indo-China.
FRENCH INDO-CHINA. CAMBODIA: *L. Pierre 1467a* (type, Paris).

The types of the two varieties proposed by Lecomte certainly show the differences mentioned by him in the original descriptions, but I feel very strongly that could an abundance of material from Indo-China be obtained, the three specimens cited above would fall into a series showing merely variations within the species proper. In the larger scope it is possible that the above species, *Litsea Pierrei* Lecomte, and *L. Vang* Lecomte might together constitute a single species with variations which one might put down as being due to ecological conditions.

31. **Litsea Thorelii** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 85. 1913; Fl. Gén. Indoch. **5**: 137. 1914; Liou, Laurac. Chine Indoch. 182. 1932.

DISTRIBUTION: India and French Indo-China.

FRENCH INDO-CHINA. COCHINCHINA: *M. C. Thorel 3367* (type, Paris).

A species with nearly linear leaves, crowded at the tips of the branches. The inflorescence consists of umbels reduced to one flower subtended by a broadly spreading "involucre." The species is similar to *Litsea pseudoelongata* Liou, but has broader leaves, shorter pedicels, and the bracts are covered with brownish pubescence.

32. **Litsea pseudoelongata** Liou, Laurac. Chine Indoch. 179, fig. 13. 1932.

DISTRIBUTION: China (Kwangtung and Hainan).

CHINA. KWANGTUNG: *Y. Tsiang 2590* (type, NY); *W. Y. Chun 7358* (sterile specimen).—HAINAN: *F. C. How 73869.*

The *How* specimen has immature fruit, too young to complete the description. The species recalls *Litsea Thorelii* Lecomte, from Cochinchina, but may be separated from the latter by longer, more numerous, more slender obtuse leaves; more numerous and more spreading veins, which are less conspicuous on the upper surface; and the cano-sericeous bracts subtending the umbels.

33. **Litsea glutinosa** (Lour.) C. B. Rob. Philip. Jour. Sci. Bot. **6**: 321. 1911; Chun, Contr. Biol. Lab. Sci. Soc. China **1**^{5}: 62. 1925; Merr. Enum. Philip. Fl. Pl. **2**: 194. 1923; Trans. Am. Philos. Soc. n. ser. **24**^{2}: 166 (Comm. Loureiro Fl. Cochinch.). 1935.

Sebifera glutinosa Lour. Fl. Cochinch. 638. 1790; ed. 2, 783. 1793.

Litsea Sebifera Pers. Syn. **2**: 4. 1807 (based on *Sebifera glutinosa* Lour.); Liou, Laurac. Chine Indoch. 196. 1932.

For complete synonymy see Merrill, l.c.

DISTRIBUTION: Tropical Asia to Malaysia.

FRENCH INDO-CHINA. ANNAM: *R. W. Squiers 351; J. & M. S. Clemens 3247.*

COCHINCHINA. *J. Loureiro* (type of *Sebifera glutinosa* not seen, Paris, Brit. Mus.).

CHINA. YUNNAN: *A. Henry 12223*, and *12223 A, B, C, D,* and *F.*

Over one hundred additional sheets of this species were examined, but they will not be listed here, since the species is very well known.

There occurs in this species variation in size and shape of leaf, and in the inflorescence, which is composed of many-flowered (8–10) umbels. The leaves are very prominently reticulate, glabrous above, with varying degrees of pubescence below (usually extremely pubescent). The flower perianths are incomplete through abortion.

33a. **Litsea glutinosa** (Lour.) C. B. Rob. var. **brideliifolia** (Hay.) Merr. Lingnaam Agr. Rev. **1**^{2}: 84. 1923; Lingnan Sci. Jour. **5**: 80. 1927.

Litsea brideliifolia Hay. Ic. Pl. Formos. **5**: 166, fig. 58b. 1915.

Tetradenia brideliifolia (Hay.) Makino & Nemoto, Fl. Jap. ed. 2, 373. 1931.

Litsea Sebifera Pers. var. *brachyphylla* Hand.-Maz. Oest. Bot. Zeit. **80**: 341. 1931.

DISTRIBUTION: southern Asia.

CHINA. HAINAN: *N. Konishi 70* (type of *Litsea brideliifolia* not seen, Taihoku Herb.); *H. Fenzel 4* (type of *Litsea Sebifera* var. *brachyphylla* not seen, Vienna); *A. Henry 8081, 8472; J. L. Gressitt 783, 1417; H. Y. Liang 63804; C. Wang 32724; S. K. Lau 22, 1583, 3539; Y. Tsiang 429; W. T. Tsang 177, 667; C. O. Levine 1248; W. Y. Chun 15; F. A. McClure 8984.*

FRENCH INDO-CHINA. ANNAM: *J. & M. S. Clemens 3305.*

Handel-Mazzetti, in a letter to Merrill, says: "*Litsea brideliaefolia* has, from the description, twigs and petioles hirsute, my plant at best puberulent, leaves with acute base, 7–8 pairs of nerves, mine with mostly rounded base and 5–6 pairs nerves. This may, however, be variable and that inexactly described."

34. **Litsea rotundifolia** Hemsl. Jour. Linn. Soc. Bot. **26**: 385. 1891.

Laurus rotundifolia Wall. List. no. 2591. 1830, nomen nudum.

Iozoste rotundifolia Nees in Wall. Pl. As. Rar. **2**: 63. 1831 (based on *Tetranthera rotundifolia* Wall.).

Tetranthera rotundifolia Wall. ex Nees l.c. in synon. (based on *Laurus rotundifolia* Wall.).

Actinodaphne chinensis var. *rotundifolia* Nees, Syst. Laurin. 600. 1836 (based on *Tetranthera rotundifolia* Wall.).

Iozoste chinensis var. *rotundifolia* Bl. Mus. Bot. Lugd.-Bat. **1**: 364. 1851 (based on *Tetranthera rotundifolia* Wall.).

Actinodaphne rotundifolia Merr. Lingnan Sci. Jour. **15**: 419. 1936, synon. pp., **syn. nov.**

DISTRIBUTION: southern China.

CHINA. *N. Wallich 2591* (isotype of *Iozoste* and *Tetranthera rotundifolia,* not seen, Kew, see footnote p. 370).—KWANGTUNG: *W. A. Harland* (type of *Litsea rotundifolia* Hemsl., Kew; photo., AA).

Except for the specimens cited above I have seen no material of the species proper. According to the International Rules, there is no reason why Hemsley's name should not be the one to be used, even though it by chance happens to be the same which the transfer of the oldest specific epithet would automatically give to the species. Inasmuch as Hemsley's name was published several years ago the specific epithet "rotundifolia" cannot now be transferred, since it would result in a later homonym. The species is easily distinguished by the rotund or ovate leaves, obtuse or acutish at the apex, with very distinct venation.

34a. **Litsea rotundifolia** Hemsl. var. **oblongifolia** (Nees), comb. nov.

Litsea chinensis Bl. Bijdr. 565. 1825, non Lam.

Iozoste rotundifolia Nees var. *oblongifolia* Nees in Hook. f. & Arnott, Bot. Beechey Voy. 209. 1836 (based on *Litsea chinensis* Bl.).

Actinodaphne chinensis var. *oblongifolia* Nees, Syst. Laurin. 600. 1836 (based on *Litsea chinensis* Bl.).

Iozoste chinensis Bl. Mus. Bot. Lugd.-Bat. 1: 364. 1851 (based on *Litsea chinensis* Bl.).

Actinodaphne chinensis Nees, Syst. Laurin. 600. 1836; Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 93. 1913; Liou, Laurac. Chine Indoch. 159. 1932.

Blume's type of *Litsea chinensis* not seen, Leiden.

DISTRIBUTION: southern and eastern China and possibly French Indo-China.

CHINA. KWANGTUNG: *W. Y. Chun 7506* (type, AA); *C. O. Levine 8, 437, 567, 992, 1250, 1619, 1622, 1824* (some of the leaves of this specimen are very nearly rotund, others are oblong, which shows the rather artificial separation of the variety from the species), *3009, 3064; C. O. Levine & G. W. Groff 85; W. T. Tsang 16502, 21199, 21210, 21562; Y. Tsiang 887, 888, 890, 1502, 1529.*—HAINAN: *F. C. How 73606.*—FUKIEN: *H. H. Chung 1054, 2175, 2233, 4522, 6871; S. G. Tang 5347, 6784; S. P. Wong 12298; O. Warburg 5839.*—KWANGSI: *R. C. Ching 7836* (very small-leaved specimen).

FRENCH INDO-CHINA. TONKIN: *B. Balansa 4756?*

The variety is similar to the species except for the leaves of the former being oblong or elliptic rather than rotund.

The variety has been known in herbaria as *Litsea* or *Actinodaphne chinensis.* The material which has come to my attention has proved to be a mixture of two different elements: the variety proper, the majority of the specimens of which are from Kwangtung and Fukien; and *Actinodaphne lancifolia* var. *sinensis* Allen. Because there has been a confusion in determination for so long, I have cited above all of the recent collections of *Litsea rotundifolia oblongifolia,* duplicates of which appear in the various herbaria throughout the world. Specimens belonging to *Actinodaphne* will likewise be cited under that genus.

35. **Litsea firma** Hook. f. var. **austrannamensis** Liou, Laurac. Chine Indoch. 191. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. ANNAM: *A. Chevalier 38727* (type, Paris; photo., AA).

Only a photograph of this variety has been seen. It differs from the species proper (fide Liou) in having smaller leaves, petioles and umbels, and fewer secondary nerves.

36. **Litsea monopetala** (Roxb.) Pers. Syn. **2**: 4. 1807.

Tetranthera monopetala Roxb. Pl. Corom. **2**: 26, pl. 148. 1798; Nees in Wall. Pl. As. Rar. **2**: 66. 1831; Meissn. in DC. Prodr. **15**^{1}: 189. 1864.

Tetranthera macrophylla Roxb. Hort. Bengal. 73. 1814.

Tetranthera macrophylla Roxb. in Wall. List No. 2549. 1830.

Litsea polyantha Juss. Ann. Mus. Hist. Nat. Paris, **6**: 211. 1805; Hook. f. Fl. Brit. Ind. **5**: 162. 1886; Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 89. 1913; Fl. Gén. Indoch. **5**: 135. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China. **1**^{5}: 63. 1925; Liou, Laurac. Chine Indoch. 192. 1932.

Tetranthera polyantha Wall. List No. 2538. 1830, nomen nudum; ex Nees in Wall. Pl. As. Rar. **2**: 67. 1831.

DISTRIBUTION: southern Asia and Pacific Islands.

INDIA. SILHET: *N. Wallich 2538* (isotype of *Tetranthera polyantha* not seen, Kew, see footnote p. 370); *N. Wallich 2549* (isotype of *T. macrophylla* Roxb., Kew, Gray).

CHINA. YUNNAN: *H. T. Tsai [55027, 55039, 55052, 56682], 60712, 60854; A. Henry 11794, 12005.*—HAINAN: *S. K. Lau 1385, 1326; W. T. Tsang & H. Fung 208; W. T. Tsang 121, 610; H. Fung 20059; H. Y. Liang 61952, 64190; C. Wang 35741, 36185; F. C. How 71318, 71691.*

FRENCH INDO-CHINA. ANNAM: *E. Poilane [24733]*; *A. Chevalier [40449]*.—WITHOUT LOCALITY: *E. Poilane [21772]*.

The species is characterized by the soft rusty pubescence of the inflorescence and the under surface of the ovate or obovate to oval-oblong leaves. The inflorescence consists of numerous pedunculate umbels. The above specimens from China and Indo-China are bracketed because they conform to the typical *L. monopetala* in spite of having glabrous to glabrescent leaves and branchlets. At this point attention should be called to the variety *glabra* from Hainan which Liou published under *Litsea polyantha.* This has no affinity either in leaf or fruit character which could place it near *L. polyantha.* Its proper position seems to be as a variety of *L. salicifolia,* which species see for discussion.

37. **Litsea Wilsonii** Gamble in Sargent, Pl. Wilson. **2**: 78. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China **1**^{5}: 61. 1925; Liou, Laurac. Chine Indoch. 191. 1932.

DISTRIBUTION: China (Szechuan).

CHINA. SZECHUAN: *E. H. Wilson 3694; Veitch Exped. 4422, 4422a* (syntypes, Kew; isotypes, AA); *W. P. Fang 2292, 2297, 2526; F. T. Wang 20579.*

The species is recognized at once by the tawny brown velutinous under surface of the obovate to oval leaves. The petioles are long, and the branches are minutely pubescent. The inflorescence consists of pedunculate axillary umbels, topped with shallow crenulate discs which subtend the ellipsoid fruit (1 cm. × 6–7 mm.).

38. **Litsea Garrettii** Gamble, Kew Bull. 1913: 204; Liou, Laurac. Chine Indoch. 196. 1932.

DISTRIBUTION: Siam and China.

SIAM: *H. B. G. Garrett 63* (syntype, Kew); *A. F. G. Kerr 880* (syntype, Kew); *A. F. G. Kerr 2541, 2602* (syntype not seen, Kew).

CHINA. YUNNAN: *A. Henry 11649, 11649 D, E, F, G, H, I; J. F. Rock 2661; H. T. Tsai 53253.*

The species is characterized by a racemose inflorescence and elliptic leaves approximately 12 cm. long, very long-attenuate, acuminate, with a tendency towards caudate, slightly falcate tips.

38a. **Litsea Garrettii** Gamble var. **longistaminata** Liou, Laurac. Chine Indoch. 196. 1932.

DISTRIBUTION: China (Yunnan).

CHINA. YUNNAN: *A. Henry 12802, 12769* (syntypes, Paris; isotypes, AA); *J. F. Rock 2595?*

A variety which has in common with *L. Dunniana* Lévl. long-exserted stamens. No fruiting specimen has thus far been reported. *Rock no. 2595* has been questionably placed here. The specimen is glabrescent and in very young fruiting stage. It is too immature, however, for the basis of a complete description of the fruit.

39. **Litsea acutivena** Hay. Ic. Pl. Formos. **5**: 163, fig. 58d. 1915; Kaneh. Formosan Trees, 439. 1917; Ouchi, Sylvia **3**: 142, pl. 4, fig. 3. 1932; Merr. Lingnan Sci. Jour. **15**: 418. 1936.

DISTRIBUTION: Formosa, southern China and Indo-China.

FORMOSA: *B. Hayata & S. Sasaki,* Mt. Arisan, Jan. 1912 (type not seen, Tokyo Herb.).

CHINA. HAINAN: *F. C. How 73416; C. Wang 33352.*—KWANGTUNG: *C. Ford,* Hongkong (as *Lindera bifaria* Benth.); *W. T. Tsang 21455.*—KWANGSI: *W. T. Tsang 22758.*

FRENCH INDO-CHINA. LAOS: *E. Poilane 15688.*

The leaves of this *Litsea* are lanceolate, oblanceolate or oblong-lanceolate, about 12 cm. long and 3.5 cm. broad, glabrous above and pubescent below. The venation is very prominent on the lower surface. The specimen from Laos has larger leaves, but in other respects agrees with the Chinese material.

40. **Litsea Kobuskiana** Allen, Jour. Arnold Arb. **18**: 290. 1937, nom. nov.

Litsea Esquirolii (Lévl.) Allen, Jour. Arnold Arb. **17**: 329. 1936.
Eurya Esquirolii Lévl. Fl. Kouy-Tchéou, 415. 1915, nomen nudum.
Neolitsea spec. Rehd. Jour. Arnold Arb. **10**: 193. 1929.
Litsea Faberi Hemsl. var. *ganchouensis* Liou, Laurac. Chine Indoch. 187. 1932, syn. nov.

DISTRIBUTION: western China.

CHINA. KWEICHOW: Gan chouen, *J. Cavalerie (Esquirol?) 3893,* in 1912 (type of *Eurya Esquirolii,* Edinburgh; isotype AA, and also type of *Litsea Faberi ganchouensis* Liou, Paris).—SZECHUAN: *C. Bock & A. von Rosthorn 276* (sterile specimen but probably belongs here).

This is characterized by oblong-lanceolate, attenuately acuminate leaves 7–10 cm. long and over 2 cm. broad, glabrous and shining above, slightly puberulous below. The leaves are penninerved and coarsely reticulate. The branchlets and petioles are pubescent, gradually becoming puberulous. The specimen of *Eurya Esquirolii* Lévl. in the Léveillé Herbarium collected in Gan chouen under the number *3893,* was without collector's name. It was supposed, since the label was similar to those frequently used by Esquirol and since Léveillé named it after Esquirol, that the latter was the collector. Cavalerie's name, however, was on the Paris specimen as evidenced by an examination of the type of Liou's variety of *Litsea Faberi* Hemsl. The leaf shape of the latter species is similar to that of *Cavalerie 3893,* but there the similarity ends. They differ in pubescence of the leaves, in their venation and reticulation. The name *Litsea Esquirolii* (Lévl.) Allen goes to synonymy because it is preoccupied. (See "Excluded Species.")

The species is named in honor of Dr. C. E. Kobuski, Assistant Curator of the Arnold Arboretum, who has made an intensive study of the genus *Eurya.*

41. **Litsea Faberi** Hemsl. Jour. Linn. Soc. Bot. **26**: 381. 1891; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 63. 1925; Liou, Laurac. Chine Indoch. 187. 1932.

DISTRIBUTION: China (Szechuan and Kiangsi).

CHINA. SZECHUAN: *E. Faber 341* (type, Kew; isotype, AA).—KIANGSI: *C. Y. Hwang 12* (AA).

A species very similar to *Litsea Kobuskiana,* but separated at once by the presence of more numerous pairs of veins deeply impressed on the upper surface, and also by the absence of obvious reticulations.

42. **Litsea elongata** (Wall. ex Nees) Benth. & Hook. f. Gen. Pl. **3**: 163 (in nota sub *Lindera).* 1880; Hook. f. Fl. Brit. Ind. **5**: 165. 1886; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 62. 1925; Liou, Laurac. Chine Indoch. 195. 1932; Merr. Lingnan Sci. Jour. **15**: 418. 1936.

Tetranthera elongata Wall. List. No. 2546. 1830, nomen nudum.
Daphnidium elongatum Nees in Wall. Pl. As. Rar. **2**: 63. 1831.

DISTRIBUTION: India to China and Tibet.

INDIA. NEPAL: *N. Wallich 2546* (isotype, Kew, see footnote p. 370).

CHINA. SZECHUAN: *F. T. Wang 22706, 23495.*—KWEICHOW: *W. Y. Chun 6433; A. N. Steward, C. Y. Chiao & H. C. Cheo 430.*—HUPEH: *H. C. Chow 1254.*—HUNAN: *H. Handel-Mazzetti 11152.*—ANHWEI: *R. C. Ching 2935.*

This species has been confused with *Litsea Faberi* Hemsl. from Kwangtung, from which it is distinguished by the elongated oblong-lanceolate or oblanceolate penninerved leaves, acuminate, pubescent below; and the ellipsoid apiculate pedunculate fruit 10 mm. × 6 mm.

42a. **Litsea elongata** (Wall. ex Nees) Benth. & Hook. f. var. **cuneifolia** Liou, Laurac. Chine Indoch. 195. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. TONKIN: *E. Poilane 12809* (type, Paris).

The variety is unusual in its almost complete lack of pubescence on the branchlets and leaves; the uniform shape of the latter; and the subsessile umbels.

43. **Litsea hupehana** Hemsl. Jour. Linn. Soc. Bot. **26**: 382. 1891; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 64. 1925; Liou, Laurac. Chine Indoch. 178. 1932.

DISTRIBUTION: known only from type locality.

CHINA. HUPEH: *A. Henry 6607, 6660* (syntypes, Kew; isotypes, Gray).

A species with crowded alternate leaves which are oblong-elliptic, glabrous above, glaucous below, the midrib reddish yellow, numerous pairs of slender nerves scarcely ascending, inconspicuous above and below. The type material which I have consists of staminate specimens in the early flowering stage. It is too soon to tell whether or not the bracts are caducous. However, there seems to be a strong resemblance to the genus *Actinodaphne*. (See *Actinodaphne Lecomtei* Allen for discussion in detail.)

44. **Litsea Dunniana** Lévl. Fedde, Rep. Spec. Nov. **9**: 460. 1911; Fl. Kouy-Tchéou, 220. 1914; Allen, Jour. Arnold Arb. **17**: 329. 1936.

Neolitsea spec. Rehd. Jour. Arnold Arb. **10**: 193. 1929.

DISTRIBUTION: known only from type locality.

CHINA. KWEICHOW: *J. Esquirol 565* (type of *Litsea Dunniana*, Paris; photo. and fragm., AA).

The species is characterized by the sessile inflorescence and long-exserted stamens; the large penninerved oblong-lanceolate leaves, the lower surface of which is covered with long slightly villous hairs. Attention has already been drawn to the similarity of *L. Dunniana* Lévl. to *L. Garrettii* Gamble var. *longistaminata* Liou. (See Allen, l.c.)

45. **Litsea mekongensis** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V, **5**: 84. 1913; Fl. Gén. Indoch. **5**: 134. 1914; Liou, Laurac. Chine Indoch. 190. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. LAOS: Mekong, *M. C. Thorel,* in 1866–68 (type, Paris).

This species is very distinctive in having large lanceolate-elliptic leaves 25–30 cm. long, acute or sub-acuminate, glabrous above except the midrib, fulvo-pubescent on veins below. The branchlets are also pubescent.

46. **Litsea viridis** Liou, Laurac. Chine Indoch. 188, fig. 14. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 1466* (type, Paris).

An unusual species with pale dull leaves prominently reticulate above and glabrescent below; with very large glands surrounding the filament, and with mucronate anthers which are often atrophied.

46a. **Litsea viridis** Liou var. **Clemensii** Liou, Laurac. Chine Indoch. 190. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. ANNAM: *J. & M. S. Clemens 3893* (type, Paris; isotype, AA); *E. Poilane 6989* (young fruiting specimen).

The leaves of the variety are larger than those of the species, more attenuate-acuminate and oval-elliptic, the petiole longer and thicker. The fruiting inflorescence consists of two (sometimes three) fruits practically sessile on the common peduncle; the peduncles are numerous and in fasciculate arrangement; the fruits are oblong-apiculate, borne loosely in shallow somewhat fluted cupules, nearly disc-shaped.

47. **Litsea iteodaphne** (Nees) Hook. f. Fl. Brit. Ind. **5**: 173. 1886.

Tetranthera iteodaphne Nees, Syst. Laurin. 542. 1836; Thwaites, Enum. Ceylon Pl. 255. 1861.

DISTRIBUTION: Ceylon and French Indo-China.

CEYLON: *G. H. K. Thwaites 10* (type of *Tetranthera iteodaphne* not seen, Berlin (?); isotype, Gray); *G. H. K. Thwaites 351, 729, 2487.*

FRENCH INDO-CHINA. ANNAM: *E. Poilane 23670, 21826, 21858.*—LAOS: *E. Poilane 26323.*

47a. **Litsea iteodaphne** (Nees) Hook. f., f. **chinensis,** f. nov. A typo differt foliis variabilibus, subacuminatis, venis reticulationibusque inconspicuis, et inflorescentia breviore.

DISTRIBUTION: China.

CHINA. KWANGSI: *W. T. Tsang 22551* (type, AA).—HAINAN: *F. C. How 73779, 72016, 72151, 72216, 72503.*

The variety differs from the species in that the leaves are subacuminate, the venation and reticulation very inconspicuous, and the inflorescence shorter. The specimens from Hainan are variable in the size of the leaves. In fact, these have been confused with *Litsea variabilis,* from which they differ in leaf shape and reticulation. The latter has oblanceolate obtuse leaves as opposed to the usually oblong-linear acute or subacuminate leaves found in *L. iteodaphne* and its variety. *Litsea variabilis* has very prominently reticulated leaves, whereas in *L. iteodaphne* the reticulation is obscure. The branches of *L. variabilis* are puberulous; those of *L. iteodaphne* are usually, though not always, glabrous at maturity.

48. **Litsea variabilis** Hemsl. Jour. Linn. Soc. Bot. **26**: 386. 1891; Liou, Laurac. Chine Indoch. 188. 1932.

DISTRIBUTION: French Indo-China and China.

CHINA. HAINAN: *A. Henry 4, 8540, 8729* (syntypes, Kew), *8431* (syntype, Kew; isotype, Gray); *W. T. Tsang 140, 174, 87, 325, 482, 506, 507, 707; C. Wang 33169, 33272; H. Y. Liang 62156, 61717, 61516, 61565, 62742, 63093, 64294; S. K. Lau 332, 122, 1009, 1389, 1411, 1455, 1801, 2871, 3549; F. C. How 71050; H. Fung 20145; F. C. How & N. K. Chun 70099, 70261, 70155,* etc.

A species with great variability in leaf shape and thickness of petiole. The leaf varies from oblanceolate to broadly ovate, acutish to obtuse to emarginate. The leaves are prominently reticulate and the branches greyish puberulous.

48a. **Litsea variabilis** Hemsl. var. **oblonga** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 90. 1913.

Litsea variabilis Hemsl. var. *tonkinensis* Lecomte, Fl. Gén. Indoch. **5**: 136. 1914, syn. nov.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. TONKIN: *B. Balansa 2404, 2407* (syntypes of *Litsea variabilis* var. *oblonga*, Paris).

The variety has more graceful branches, more membranaceous leaves, not as variable as the species proper, but elliptic, acute to subacuminate, with the reticulations less obvious.

The variety *oblonga* was described in 1913, with the following numbers cited, collected by Balansa: *Nos. 2402, 2403, 2404, 2405, 2406* and *2407*. The herbarium specimens of *Nos. 2404, 2405* and *2407* (the only ones at present available) have the varietal name *oblongifolia* Lecomte written in and crossed out, var. *tonkinensis* replacing it. It would seem that Lecomte had forgotten his earlier name or disregarded it entirely. Of the three numbers at hand, *Nos. 2404* and *2407* are the same. They show an affinity for *L. variabilis* proper and doubtless represent the typical Indochinese variety. *Number 2405,* however, has no connection with *Litsea variabilis* but seems rather to be near *Litsea chartacea.* Until the remaining numbers cited by Lecomte are seen, no attempt at placing *No. 2405* will be made.

49. **Litsea Greenmaniana,** spec. nov.

Arbor circa 6 m. alta, ramulis teretibus rubro-brunneis leviter striatis gracilioribus ex glabrescentibus glabris. Folia alterna, leviter membranacea, elliptica vel suboblanceolata, 7–11 cm. longa, 2.2–3.5 cm. lata, acuminata, saepe falcata, ad basin acuta, pallide viridia, concoloria, supra nitida, subtus opaca, glabra, bene reticulata, penninervia, nervis circiter 10-jugis utrinque prominulis, subtus crassioribus, petiolis 8–15 mm. longis glabrescentibus et brunnescentibus. Subumbellae in quaque inflorescentia 1–4, pedunculatae, pauciflorae, pedunculis 2–3 mm. longis. Flores pubescentes: ♂ perianthii tubo brevissimo, lobis 6 ellipticis, staminibus 9, filamentis pubescentibus. Flores ♀ ex anthesi fere peracta, haud eruendi. Fructus immaturus, cupula pedicelloque dense pubescentibus.

DISTRIBUTION: southeastern China.

CHINA. KWANGTUNG: *W. T. Tsang 21102* (type, AA), *21229; H. Fung A542 (18947).*—KIANGSI: *S. K. Lau 4754.*—FUKIEN: *J. L. Gressitt 1687.*

The unusual feature of this species is the very conspicuous reticulation and the shining upper-surface of the leaves, the combination giving a viscid appearance. The reddish appearance of the branchlets, and at times the veins, is a distinguishing characteristic. The ♀ flowers are rather far advanced to have retained any characters valuable for diagnosis. The species is named for Dr. J. M. Greenman, Curator of the Herbarium at Missouri Botanical Garden, to whom this paper is dedicated.

50. **Litsea lancifolia** (Roxb.) Benth. & Hook. f. ex F.-Villar in Blanco, Fl. Filip. ed. 3, **4**: (Nov. App.) 181. 1880 (based on *Tetranthera lancifolia* Roxb.); Hook. f. Fl. Brit. Ind. **5**: 159. 1886 (based on *T. lancifolia* Roxb., Wallich List No. 2532, excl. W. Griffith's spec.); Hemsl. Jour. Linn. Soc. Bot. **26**: 382. 1891 (pro parte); Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 90. 1913; Fl. Gén. Indoch. **5**: 134. 1914.

Tetranthera lanceofolia Roxb. Hort. Bengal. 73. 1814, nomen nudum.

Tetranthera lancifolia Roxb. ex Wall. List No. 2532. 1830, nomen nudum; ex Nees in Wall. Pl. As. Rar. **2**: 65. 1831; Miq. Fl. Ind. Bat. **1**^{1}: 944. 1858.

DISTRIBUTION: India to China, and reputedly Sumatra.

INDIA. SILHET: *N. Wallich 2532* (isotype of *Tetranthera lancifolia*, Kew, Gray, see footnote p. 370).

CHINA. HAINAN: *F. C. How 73261.*

Litsea lancifolia has elliptic, acute or acuminate leaves approximately 10 × 3 cm., membranaceous, penninerved, glabrescent above, glaucous and softly pubescent below. The branches are ferrugineous-tomentose. The above name was originally given by Roxburgh to *Tetranthera* as a *nomen nudum* in his 'Hort. Bengal.' in 1814. Wallich's 'List,' No. 2532 was first associated with a description by Nees in Wallich, 'Pl. As. Rar.' in 1831. Miquel in 1858 draws attention to the fact that the two plants are not the same. He treats Wallich's specimen as *T. lancifolia* F.-Villar and accepts his determination. Hemsley includes *Actinodaphne lancifolia* and its attending synonymy under *Litsea lancifolia* F.-Villar. Bentham and Hooker f. did not use this binomial in the 'Genera Plantarum.' Thus the combination must be cited as above. The species is supposedly found in Sumatra, but the latter material does not conform to the type material. It is rather nearer its variety *borneensis* (Meissn.) Boerl.

50a. **Litsea lancifolia** (Roxb.) Benth. & Hook. f. ex F.-Villar var. **pedicellata** Hook. f. Fl. Brit. Ind. **5**: 159. 1886.

DISTRIBUTION: India and China.

INDIA. TENASSERIM OR ANDAMAN ISLANDS: *Helfer, Kew Distrib. No. 4306* (type, Kew; isotype, Gray).

CHINA. YUNNAN: *A. Henry 10759, 11143, 12301 A-C, 12235; H. T. Tsai 55301, 55330, 60286, 60337, 60520, 62133.*

The specimens from Yunnan all seem to be the variety rather than the species in that they are more glabrous and have the very slender, longer peduncles of the type of the former. Actually, the varietal name is a misnomer. The peduncles of the umbels are very apparent, and it is evidently this fact that Hooker had in mind in naming the variety.

51. **Litsea Balansae** Lecomte, Fl. Gén. Indoch. **5**: 135. 1914; Liou, Laurac. Chine Indoch. 191. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. TONKIN: *B. Balansa 3196* (type not seen, Paris; photo., AA).

Litsea Balansae is a small-leaved species with leaves less than 8 cm. long and under 3 cm. broad, glabrous above, pubescent below, and penninerved with 6–7 pairs of nerves more prominent on the lower surface than on the upper. This species was described from a ♀ specimen only. Liou has placed it in the same group with *Litsea umbellata* (Lour.) Merr. Until more material is collected and further study made, no definite disposition of the species can be proposed. It is very probable that the plant may be a *Lindera*. The photograph shows the habit to be similar to that of *Lindera laureola* Coll. & Hemsl.

52. **Litsea umbellata** (Lour.) Merr. Philip. Jour. Sci. Bot. **14**: 242. 1919; Trans. Am. Philos. Soc. n.ser. **24**^{2}: 167 (Comm. Loureiro Fl. Cochinch.). 1935.

Hexanthus umbellatus Lour. Fl. Cochinch. 196. 1790; ed. 2. 242. 1793; Moore, Jour. Bot. **53**: 254. 1925.

Litsea hexantha Juss. Ann. Mus. Hist. Nat. Paris, **6**: 212. 1805 (based on *Hexanthus umbellatus* Lour.).

Tetranthera ferruginea R. Br. Prodr. 403. 1810, pp. *quoad syn.* Lour.

Litsea amara Bl. Bijdr. 563. 1825; Lecomte, Fl. Gén. Indoch. **5**: 136. 1914; Liou, Laurac. Chine Indoch. 190. 1932.

Tetranthera amara Nees, Syst. Laurin. 551. 1836.

DISTRIBUTION: India and French Indo-China to China, Sumatra, Java and Borneo.

JAVA. (type of *Litsea amara* not seen, Herb. Leiden.)

FRENCH INDO-CHINA. ANNAM: Hue, *J. Loureiro* (type of *Hexanthus umbellatus* not seen, Brit. Mus.); *J. & M. S. Clemens 3169; E. Poilane 22273.*—TONKIN: *P. Eberhardt 3969.*—LAOS: *E. Poilane 20545.*—CAMBODIA: *Bejèaud 83.*—COCHIN-CHINA: *E. Poilane 19571.*

CHINA. KWANGSI: *W. T. Tsang 21836.*

Usually *Litsea umbellata* is recognized by the oblong-oval or elliptic leaves, apiculate or acuminate, and covered on the lower surface with red-brown tomentum, in contrast to the bright green upper surface (usually discernible even in the dried specimens). Since this species is polymorphic, the numerous varieties of Meissner and Hooker are not treated. It is possible that some of these, though described from the Islands and the Malay Peninsula, may be found in Indochina. The variation within the species is so great, however, and the species so easily distinguished, that no attempt will be made here to separate them.

DOUBTFUL SPECIES

Litsea salicifolia (Roxb.) Hook. f. Fl. Brit. Ind. **5**: 167. 1886; Liou, Laurac. Chine Indoch. 180. 1932.

Tetranthera salicifolia Roxb. ex Wall. List No. 2536A, pp., B, C. 1830, nomen nudum; ex Nees in Wall. Pl. As. Rar. **2**: 66. 1831.

DISTRIBUTION: India, and possibly French Indo-China. Liou cites the species as occurring in Tibet.

INDIA: *N. Wallich 2536A,* ex parte, *B, C,* (isotype of *Tetranthera salicifolia* not seen, Kew, see footnote p. 370).

The species is characterized by oblong-elliptic leaves 11–20 cm. long, 2.5–5.5 cm. broad, and ellipsoid fruit 10–11 mm. long.

Litsea salicifolia (Roxb.) Hook. f. var. **attenuata** (Meissn.) Hook. f. Fl. Brit. Ind. **5**: 168. 1886.

Tetranthera glauca var. *attenuata* Meissn. in DC. Prodr. **15**^{1}: 185. 1864.

Tetranthera attenuata Wall. List No. 2534. 1830, nomen nudum; ex Nees in Wall. Pl. As. Rar. **2**: 66. 1831.

DISTRIBUTION: India and Tibet.

INDIA. SILHET: *N. Wallich 2534* (isotype of *Tetranthera attenuata,* Kew, NY, see footnote p. 370).

Nees, in Wallich, 'Pl. As. Rar.' **2**: 66–7. 1831, described *Tetranthera glauca, T. salicifolia* and *T. saligna* as species. *T. saligna* is based on *T. angustifolia* Wallich, 'List,' but the name is changed to *saligna* because *Litsea angustifolium* Blume has already been described. Meissner, in DC. 'Prodromus' **15**^{1}: 183, 185. 1864, recognizes *T. angustifolia* and *T. glauca, T. saligna* in part being in synonymy under *T. angustifolia,* and in part being a variety of *T. glauca. T. salicifolia* is split up under the several varieties of *T. glauca.* Hooker, also, recognizes the same *T. glauca,* but transfers it to *Litsea.* However, Hooker retains the specific name of *salicifolia* under *Litsea,* keeping the same varieties under the latter species that Meissner had under *T. glauca.* Having at hand no type of *T. salicifolia* proper or of *T. angustifolia* and only two of the varieties under *T. glauca,* the synonymy cannot at present be straightened out. It remains to wait until the Indian types of all are available, before such an attempt is made. Liou reports the species *L. salicifolia* as occurring in Tibet, hence its inclusion in the present treatment. I have not seen any material outside of India that I would place in the species.

Litsea salicifolia (Roxb.) Hook. f. f. **glabra** (Liou), comb. nov.

Litsea polyantha Jussieu f. *glabra* Liou, Laurac. Chine Indoch. 193. 1932.

DISTRIBUTION: China (Hainan).

CHINA. HAINAN: *W. T. Tsang & H. Fung 634* (type of *Litsea polyantha glabra,* Paris; isotype, AA); *F. C. How 72093, 72537, 72739.*

Since *Litsea salicifolia,* though its status is as yet uncertain, obviously is the nearest relative of the f. *glabra* of Liou, the above combination has been made to denote the position of the latter in the genus.

EXCLUDED SPECIES AND VARIETIES

Litsea aurata Hay. Jour. Coll. Sci. Tokyo, **30**: 246 (Mater. Fl. Formosa). 1911 = **Neolitsea aurata** (Hay.) Merr.

Litsea Cavaleriei Lévl. in Fedde. Rep. Spec. Nov. **10**: 371, 1912 = **Lindera communis** Hemsl.

Litsea Chaffanjoni Lévl. in Fedde, Rep. Spec. Nov. **12**: 182. 1913 = **Symplocos stellaris** Brand.

Litsea confertifolia Hemsl. Jour. Linn. Soc. Bot. **26**: 379. 1891 = **Neolitsea confertifolia** (Hemsl.) Merr.

Litsea consimilis Nees, Syst. Laurin. 628. 1836 = **Neolitsea umbrosa** (Wall.) Gamble.

Litsea coreana Lévl. in Fedde, Rep. Spec. Nov. **10**: 370. 1912 = **Machilus Thunbergii** Sieb. & Zucc.

Litsea cupularis Hemsl. Jour. Linn. Soc. Bot. **26**: 380. 1891 = **Actinodaphne cupularis** (Hemsl.) Gamble.

Litsea Esquirolii Lévl. in Fedde, Rep. Spec. Nov. **9**: 459. 1911 = **Lindera communis** Hemsl.

Litsea fruticosa Gamble[1] = **Lindera fruticosa** Hemsl.

Litsea glauca Sieb. Verh. Bat. Genoot. **12**: 24. 1830 = **Neolitsea Sieboldii** (O. Ktze.) Nakai.

Litsea gracilipes Hemsl. Jour. Linn. Soc. Bot. **26**: 381. 1891 = **Neolitsea wushanica** (Chun) Merr.

Litsea hupehana Hemsl. var. *longifolia* Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 88. 1913 = **Actinodaphne Lecomtei**, spec. nov. (see p. 413).

Litsea laxiflora Hemsl. Jour. Linn. Soc. Bot. **26**: 383. 1891 = **Sassafras Tzumu** Hemsl.

Litsea Mairei Lévl. Cat. Pl. Yun-Nan, 150. 1916 = **Myrica adenophora** Hance.

Litsea myricopsis Lévl. Cat. Pl. Yun-Nan, 150. 1916 = **Myrica esculenta** Ham. ex Don.

Litsea obovata Nees, Syst. Laurin. 636. 1836 = **Actinodaphne obovata** Bl.

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[1] **Lindera fruticosa** Hemsl. Jour. Linn. Soc. Bot. **26**: 388. 1891.

Litsea fruticosa Gamble in Sargent, Pl. Wilson. **2**: 77. 1914; Liou, Laurac. Chine Indoch. 171. 1932.

Benzoin fruticosum (Hemsl.) Rehd. Jour. Arnold Arb. **1**: 145. 1919; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 42. 1925.

DISTRIBUTION: China.

CHINA. HUPEH: *A. Henry 4750, 6571* (syntypes, Kew; isotypes, Gray).—HONAN: *J. Hers* for *E. H. Wilson 40,* in 1918 (♂ specimen in AA).

These specimens are fruiting branches and ♀ flowers respectively. Gamble based his new combination on Wilson's *1636, 1659* from Kiangsi, *3670*, and *Veitch 1946* from Hupeh, and *4587* from Szechuan. The *Veitch No. 1946* I have not seen. Numbers *1636, 1659*, and *3670* are fruiting specimens. Number *4587* has ♂ flowers in few-flowered, practically sessile glomerules, and has four-celled anthers, which latter was the basis of Gamble's assumption that the plant was a *Litsea.* But the anther cells, instead of being one pair above the other, are one pair introrse, the second pair laterally extrorse. This number, hence, must be placed in the genus *Neocinnamomum.* Thus the name *Lindera fruticosa* stands. *Hers* for *Wilson Number 40* shows a typical *Lindera* flower with two-celled anthers. The infrutescence of *Lindera fruticosa* is the typical pedunculate umbel with numerous fruits. The fruit of *Neocinnamomum* has the enlarged calyx typical of *Cinnamomum.* Geographically the two are separate, *Neocinnamomum* occurring in the western part of China, and India, and *Lindera fruticosa* found in central and eastern China.

Litsea Playfairii Hemsl.[1] = **Lindera Playfairii** (Hemsl.), comb. nov.

Litsea pulchella Meissn. in DC. Prodr. **15**¹: 224. 1864 = **Neolitsea pulchella** (Meissn.) Merr.

Litsea shweliensis W. W. Sm. Notes Bot. Gard. Edinb. **13**: 167. 1921 = **Actinodaphne confertiflora** Meissn.

Litsea touyunensis Lévl. in Fedde, Rep. Spec. Nov. **11**: 63. 1912 = **Lindera megaphylla** Hemsl. f. **touyunensis** (Lévl.) Rehd.

Litsea umbrosa Nees, Syst. Laurin. 623. 1836 = **Neolitsea umbrosa (Wall.)** Gamble.

Litsea undulatifolia Lévl. Fl. Kouy-Tchéou, 220. 1914 = **Neolitsea undulatifolia** (Lévl.) Allen.

Litsea wushanica Chun, Jour. Arnold Arb. **9**: 153. 1928 = **Neolitsea wushanica** (Chun) Merr.

Litsea zeylanica Nees, Amoen. Bot. Bonn. fasc. 1: 58, pl. 5 (Cinn. Disput.). 1823 = **Neolitsea zeylanica** (Nees) Merr.

Litsea zeylanica Nees var. *chinensis* Benth. in Hook. f. Jour. Kew Gard. Miscel. **5**: 199. 1853 = **Neolitsea pulchella** (Meissn.) Merr.

KEY TO THE SPECIES OF ACTINODAPHNE

1. Leaves triplinerved..1. *A. confertiflora*
1. Leaves penninerved.
  2. Fruit pubescent..2. *A. trichocarpa*
  2. Fruit glabrous.
    3. Leaves obovate.
      4. Leaves 10 cm. long or less..............................3 *A. magniflora*
      4. Leaves over 10 cm. long.
        5. Fruit globose, 0.4 cm. or less in diam.; inflorescence racemose; leaves 15–20 cm. long..................................4. *A. pilosa*
        5. Fruit elliptic, 2.5 cm. long, 1 cm. broad; inflorescence of numerous umbels; leaves up to 50 cm. long........................5. *A. obovata*
    3. Leaves never obovate.
      4. Largest leaves less than 10 cm. long.
        5. Fruit subtended by cupules 0.4–0.5 cm. long............6. *A. cupularis*
        5. Fruit subtended by shallow disc nearly flat.

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[1] **Lindera Playfairii** (Hemsl.), comb. nov.

Litsea Playfairii Hemsl. Jour. Linn. Soc. Bot. **26**: 384. 1891.

Neolitsea Playfairii Chun, Contr. Biol. Lab. Sci. Soc. China, 1⁵: 66. 1925; Merr. Lingnan Sci. Jour. **5**: 81. 1927; Liou, Laurac. Chine Indoch. 145, pl. 1932.

DISTRIBUTION: China (Kwangtung).

CHINA. KWANGTUNG: *G. M. Playfair* (type, Kew; photo. & fragm., AA).

The original description gives "flowers 6-merous, perianth segments petaloid." Chun, when he made the combination under *Neolitsea*, stated that the flowers were in bud. Dissection shows the typical *Lindera* flowers. It is possible that under *Lindera* this same species has already been described and that only careful study of that genus will reveal it. No fruiting material is described for this species.

6. Leaves obtusish at apex, dull on upper surface (Japan & Formosa)..7. *A. lancifolia*

6. Leaves acutish at apex, more shining on upper surface, usually smaller than species (China).........7a. *A. lancifolia* var. *sinensis*

4. Largest leaves over 10 cm. long.

5. Inflorescence racemose; cupule densely pubescent........8. *A. Henryi*

5. Inflorescence not racemose.

6. Leaves alternate.

7. Young branchlets and lower leaf-surface ferrugineous-tomentose..9. *A. ferruginea*

7. Young branchlets, midrib and secondary nerves brown-pubescent; lower leaf-surface glaucous.............10. *A. litseaefolia*

6. Leaves verticillate or pseudoverticillate.

7. Leaves caudate-acuminate at apex; stamens exserted...11. *A. Tsaii*

7. Leaves never caudate-acuminate.

8. Fruit globose.

9. Leaves narrowly lanceolate, up to 50 cm. long...12. *A. sesquipedalis*

9a. Leaves smaller, more pubescent.....................................12a. *A. sesquipedalis* var. *cambodiana*

9. Leaves not narrowly lanceolate, less than 30 cm. long.

10. Leaves broadly elliptic, dark, and shining above, pale below...............................13. *A. perlucida*

10. Leaves not broadly elliptic.

11. Fruit not more than 1 cm. in diam., not apiculate ....14. *A. glaucina*

11. Fruit more than 1 cm. in diam., definitely apiculate ....15. *A. omeiensis*

8. Fruit not globose.

9. Fruit ovoid.

10. Leaves linear or oblong-lanceolate, shining above.... ....16. *A. setchuenensis*

10. Leaves elliptic-lanceolate, reticulate above.17. *A. reticulata*

10a. Leaves entirely glabrous.......................................17a. *A. reticulata* var. *glabra*

9. Fruit oblong or obovoid.

10. Numerous pairs of secondary veins, ascending, conspicuous on lower surface; lower surface of leaves light brown, pilose-pubescent, glaucous when young; fruit oblong............17b. *A. reticulata* var. *Forrestii*

10. Secondary veins obscure; lower surface of leaves glaucous when young; fruit obovoid.........18. *A. Lecomtei*

1. **Actinodaphne confertiflora** Meissn. in DC. Prodr. **15**^{1}: 219. 1864; Hook. f. Fl. Brit. Ind. **5**: 154. 1886.

Litsea shweliensis W. W. Sm. Notes Bot. Gard. Edinb. **13**: 167. 1921; Liou, Laurac. Chine Indoch. 171. 1932, **syn. nov.**

DISTRIBUTION: India and China.

INDIA. BHUTAN: *W. Griffith 2486* (type of *A. confertiflora* not seen, Kew); E. HIMALAYA: *W. Griffith 4333* (Kew, duplicate, Gray).

CHINA. YUNNAN: Shweli-Salween Divide. *G. Forrest 15705, 17531, 17648, 17697* (syntypes of *L. shweliensis*, Edinburgh; isotypes, AA).

This is a striking species because of its large ovate triplinerved leaves (15 × 10 cm.), glabrous, very shining and heavily reticulate above, and paler below.

In Hooker's 'Flora,' the specimen cited under *Actinodaphne confertiflora* is *Griffith* (Kew Distrib. *433).* This undoubtedly should be *4333,* the specimen cited above. Whether or not this is the number *2486* of Griffith, assigned to a different Kew Distribution number, cannot be ascertained without examination of the type in Hooker's Herbarium at Kew. The duplicate sheets of *Griffith No. 4333,* at Gray Herb. and N. Y., both are under the genus *Litsea,* the species being attributed also to Meissner. Since no trace of the publication of this combination has been found, it is presumably an herbarium name only. Therefore, it will not be mentioned in the present treatment. Examination of the specimens shows no reason for the species being considered a *Litsea.*

2. **Actinodaphne trichocarpa**, spec. nov.

Arbor ad 8 m. alta, ramulis teretibus brunneis adpresse pubescentibus, perulis ad basin ramulorum diu persistentibus. Folia in apice ramulorum verticillata, primo membranacea, demum satis coriacea, oblanceolata ad elliptica, 8–13 cm. longa, 2–3 cm. lata, varie acuminata, ad basin acuta vel subrotundata, supra sub lente minute reticulata, pallide viridia, glabra, subtus saepe glaucescentia, adpresse pubescentia glabrescentiave, margine undulata, penninervia, nervis 6–10 (vel pluribus) satis arcuatis, supra inconspicuis subtus satis prominentibus, petiolis 5–8 mm. longis, adpresse pubescentibus. Inflorescentia subumbellata, pauciflora, axillaris, solitaria, subsessilis; Flores ♂ & ♀ ignoti. Fructus globosus, 12–15 mm. latus, brunneus, adpresse tomentosus, disco plano, pedicello satis crasso.

DISTRIBUTION: western China.

CHINA. SZECHUAN: Mt. Omei, *F. T. Wang 23494* (type, AA); same locality

W. P. Fang 3100; Kuan-hsien, *W. P. Fang 1997.*—YUNNAN: Liang-shan, La'mi, *H. T. Tsai 51249.*

This species is unusual for the large pubescent fruit, which is characteristic of all of the specimens cited above. The *Wang* number is less glaucous on the lower leaf surface, and nearly glabrous. The Yunnan plant is also less glaucous, highly pubescent on the young leaves, and the leaves are somewhat larger and more elliptic than those of the Szechuan plants. However, due to the character of the fruit and the persistent bud-scales, these are all united under one species.

3. **Actinodaphne magniflora**, spec. nov.

Arbor 3 m. alta, ramulis teretibus striatis brunneis primo dense tomentosis demum adpresse ferrungineo-pubescentibus. Folia in apice ramulorum subverticillata, subcoriacea, oblanceolato-elliptica, 6–10 cm. longa, 2.5–4 cm. lata, abrupte acuminata, ad basin cuneata, supra sub lente minute reticulata, glabra, subtus ferrugineo-pubescentia, ad marginem leviter revoluta, penninervia, nervis flavis 8–10-jugis subarcuatis, supra immersis subtus prominulis, pubescentibus, petiolis 7–12 mm. longis tomentosis. Inflorescentia axillaris, ex subumbellis numerosis verticillatis confertis, composita, pedunculis 8–10 mm. longis, pubescentibus. Flores 3–5, circa 7 mm. longi, pedicello pubescente, 2–4 mm. longo, perianthii tubo brevissimo, lobis 6, ellipticis extus pubescentibus intus glabris. Flores ♂ staminibus 9, filamentis 5–7 mm. longis, ad basin pubescentibus, staminibus exterioribus 6, interioribus 3 biglandulosis, glandulis breviter stipitatis cordatis, staminodiis triangularibus stipitatis pubescentibus, ovario glabro, stylo filiformi, stigmate subdiscoideo. Flores ♀ fructusque ignoti.

DISTRIBUTION: China.

CHINA. KWANGTUNG: Hongkong, no collector given, *659* (as *Actinodaphne angustifolia).*—KWANGSI: Tou Ngok Shan, along Kwantung border, *W. T. Tsang 23203* (type, AA).

One of the large-flowered species of *Actinodaphne,* distinctive because of its large reddish brown pubescent flowers, borne in a terminal cluster; and because of its obovate, subverticillate leaves, pubescent on the lower surface. This has been placed in *Actinodaphne* because of the fact that the scales are caducous at anthesis. The Hongkong specimen *No. 659* was labeled *A. angustifolia* Nees, but it differs materially from the latter in pubescence and in inflorescence.

4. **Actinodaphne pilosa** (Lour.) Merr. Trans. Am. Philos. Soc. n.s. **24**^{2}: 165(Comm. Loureiro. Fl. Cochinch.). 1935.

Laurus pilosa Lour. Fl. Cochinch. 253. 1790; ed. 2. 311. 1793.

Machilus pilosa Nees, Syst. Laurin. 176. 1836.

Tetranthera pilosa Sprengel, Syst. **2**: 267. 1825.

Actinodaphne cochinchinensis Meissn. in DC. Prodr. **15**^{1}: 216. 1864; Lecomte, Not. Syst. **2**: 330. 1913; Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 92. 1913; Fl. Gén. Indoch. **5**: 128, pl. 4. 1914; Merr. Lingnan Sci. Jour. **9**: 37. 1930; Liou, Laurac. Chine Indoch. 157. 1932.

Machilus hainanensis Merr. Philip. Jour. Sci. **21**: 342. 1922; Lingnan Sci. Jour. **5**: 80. 1927.

DISTRIBUTION: French Indo-China and China.

FRENCH INDO-CHINA. COCHINCHINA: *C. Gaudichaud 1839* (type of *A. cochinchinensis* not seen, Paris); *C. Gaudichaud 286* (cited in Lecomte's emended description, Paris).—ANNAM: *J. Loureiro* (type of *Laurus pilosa* not seen, Brit. Mus.?); *A. Chevalier 41230.*—TONKIN: *A. Petelot 759, 5966.*

CHINA. HAINAN: *F. A. McClure 7957* (type of *Machilus hainanensis*, NY); *7674* (paratype of same, NY; isotype, AA); *F. C. How 71736; C. Wang 34115, 35178, 35748, 36675; S. K. Lau 2930, 2962, 3516; N. K. Chun & C. L. Tso 43655, 44112, 44693; H. Fung 20058; W. T. Tsang 44935; H. Y. Liang 63828, 63829, 63225, 63140, 64081, 64476; S. P. Tang & H. Fung 19149; C. I. Lei 168, 344; F. A. McClure 19731, 19756.*—KWANGSI: *W. T. Tsang 21968; R. C. Ching 7772, 7765.*—YUNNAN: *A. Henry 13588.*

An unusual *Actinodaphne* characterized by large leaves up to 15 cm. or more long, obovate, acuminate, penninerved, shining above, glabrous and pilose below. The branchlets and inflorescence are also densely but closely pubescent. The inflorescence consists of a raceme about 3–4 cm. long; the fruit is globose and small, measuring less than 4 mm. in diam. It is a question whether or not this species so long included in the genus *Actinodaphne* should remain there. The inflorescence and fruiting specimens are certainly not typical of the usual conception of the genus.

5. **Actinodaphne obovata** Bl. Mus. Bot. Lugd.-Bat. **1**: 342. 1851; Meissn. in DC. Prodr. **15**^{1}: 219. 1864; Liou, Laurac. Chine Indoch. 158. 1932.

Tetranthera obovata Hamilt. ex Wall. List No. 2562. 1830.
Tetradenia obovata Nees in Wall. Pl. As. Rar. **2**: 64. 1831.
Laurus obovata Hamilt. ex Nees in Wall. l.c.
Litsea obovata Nees, Syst. Laurin. 636. 1836.

DISTRIBUTION: India and China.

INDIA. SILHET: *N. Wallich 2562* (isotype of *Tetranthera obovata,* Kew, see footnote p. 370).

CHINA. YUNNAN: *H. T. Tsai 60884; C. Schneider 3902; G. Forrest 17821.*

This is one of the largest-leaved of the actinodaphnes known, the blade measuring sometimes 50 cm. in length and 25–30 cm. in width. The leaves are striking because of the rich warm-brown pubescence on the nerves, particularly on the under surface where they stand in relief against the extremely glaucous background. The inflorescence is composed of numerous pedunculate 2–3-flowered umbels. The fruit is black, elliptic, up to 2.5 cm. long and about 1 cm. broad, subtended by a flaring disc-like cupule 8–10 mm. long and 2–3 mm. in diameter. In 1911, Hayata[1] described *Litsea obovata* from Formosa. This name, although invalidated by the above publication of Nees, has been accepted in later floristic publications from Japan and Formosa. Makino & Nemoto[2] made the change to *Tetradenia.*

6. **Actinodaphne cupularis** (Hemsl.) Gamble in Sargent, Pl. Wilson. **2**: 75. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 53. 1925.

Litsea cupularis Hemsl. Jour. Linn. Soc. Bot. **26**: 380. 1891.

DISTRIBUTION: western and central China.

CHINA. HUPEH: *A. Henry 3473, 3473B, 4382, 4584, 7711, 7750* (syntypes not seen, Kew); *A. Henry 3240, 3473A, 4370* (syntypes, Kew; isotypes, AA); *H. C. Chow 1489, 1543.*—SZECHUAN: *A. Henry 7122* (syntype not seen, Kew); *T. T. Yü 291; F. T. Wang 20683, 23644; W. P. Fang 1276, 1998, 5663, 5747.*—KWEICHOW: *A. N. Steward, C. Y. Chiao & H. C. Cheo 246; Y. Tsiang 6171.*

The leaves of this species are elliptic, acuminate, penninerved, glabrous above, somewhat glaucous and pubescent to glabrescent below. The fruit is ovoid, 12–14 mm. long, distinctly apiculate at the apex, and subtended by a deep more or less rugose cupule.

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[1] Hayata, Jour. Coll. Sci. Tokyo, **30**: 252. 1911.

[2] Makino & Nemoto, Fl. Jap. ed 2. 375. 1931.

7. **Actinodaphne lancifolia** (Sieb. & Zucc.) Meissn. in DC. Prodr. **15**^{1}: 211. 1864; Franch. & Sav., Enum. Pl. Jap. **1**: 413. 1875.

Daphnidium lancifolium Sieb. & Zucc. Abh. Akad. Wiss. Muench. **4**^{3}: 207 (Fam. Nat. Fl. Jap. **2**: 83). 1846.

Iozoste lancifolia Bl. Mus. Bot. Lugd.-Bat. 1: 364. 1851.

Litsea lancifolia sensu Hemsl. Jour. Linn. Soc. Bot. **26**: 382. 1891; Mats. & Hay. Enum. Pl. Formos. 352. 1906, non F.-Villar.

DISTRIBUTION: Japan and Foromsa.

JAPAN: (type of *Daphnidium lancifolium* not seen, Leiden).

This species has caused much discussion (see *Litsea rotundifolia* var. *oblongifolia* [Nees] Allen). It has rather small leaves 8–10 cm. long, more elliptic than lanceolate, subacuminate with obtuse acumen, penninerved, glabrous above, glabrescent below. The petioles are glabrescent, and the branchlets glabrescent to glabrous. The inflorescence consists of a solitary subumbel, subsessile. The pedicel is approximately 5 mm. long, topped by a shallow irregular disc with a spread of less than 4 mm. The fruit is subglobose, 6–7 mm. in diameter and apiculate. *Litsea lancifolia* (Roxb.) Benth. & Hook. f. ex. F.-Villar is a true *Litsea,* and has nothing to do with *Actinodaphne lancifolia* (Sieb. & Zucc.) Meissn. *Litsea lancifolia* F.-Vill. was based on the very different *Tetranthera lancifolia* Roxb., not on *Daphnidium (Iozoste) lancifolium* Sieb. & Zucc.

7a. **Actinodaphne lancifolia** (Sieb. & Zucc.) Meissn. var. **sinensis,** var. nov.

A typo differt foliis plerumque minoribus acutis coriaceis saepe glaucinis, fructu pedicellis plerumque brevioribus.

DISTRIBUTION: eastern and central China.

CHINA. CHEKIANG: *S. Chen 37, 439, 1165, 1258, 1414, 2156* (type, AA), *2415; W. C. Cheng 2146, 3607; R. C. Ching 5004, 5201; Y. Y. Ho 1317, 1627; Y. L. Keng 256.*—KIANGSU: *Y. L. Keng 2672, 2682.*—HUPEH: *H. C. Chow 1321.*

The leaves of the variety are, for the most part, smaller, more acute at the apex and more shining on the upper surface. In some cases, they are less obviously glaucous. In working over the material of *Litsea rotundifolia* var. *oblongifolia* (Nees) Allen, which was under *Actinodaphne* or *Litsea chinensis* in the herbarium, I found that a goodly portion was not

Litsea rotundifolia oblongifolia, but a species different in leaf shape, petiole length and infrutescence. It resembles *Actinodaphne lancifolia* (Sieb. & Zucc.) Meissn. from Japan, but differs slightly in leaf characters. The infrutescence is similar. Although the difference is slight, I propose the above new variety of the species, because of geographical separation. I have cited all of the specimens of the variety which I have seen, since they are for the most part recent collections which have been misidentified in various herbaria. It will be observed that the majority are from the province of Chekiang.

8. **Actinodaphne Henryi** Gamble, Kew Bull. 1913: 265; Liou, Laurac. Chine Indoch. 157. 1932.

DISTRIBUTION: known only from the two collections cited.
CHINA. YUNNAN: *A. Henry 11799A* (type, Kew; isotype, AA), *11799* (fruiting specimens cited in the additional description of fruit given by Liou, l.c.).

Actinodaphne Henryi is a distinctive species due to the extremely large lanceolate or elliptic penninerved leaves 25–30 cm. long, 6–7 cm. broad, and to the greyish-tan pubescent branchlets. The inflorescence is racemose and is covered completely with a dense golden-brown sericeous pubescence. The cupules are very distinctive in that they are covered with a fine greyish pubescence.

9. **Actinodaphne ferruginea** Liou, Laurac. Chine Indoch. 160. fig. 12. 1932.

DISTRIBUTION: known only from type locality.
FRENCH INDO-CHINA. ANNAM: *E. Poilane 1127* (type, Paris; photo., AA).

The above species is distinguished by alternate elliptic leaves 15 cm. or more long and up to 5 cm. broad, attenuately acuminate at apex and subrotund at the base, penninerved, glabrous shining above, and ferrugineous-tomentose below, particularly on the nerves. The young branchlets and petioles are at first covered with a close ferrugineous tomentum, but finally become glabrescent. "Ferrugineous" is hardly the term that should be used to express the shade of the pubescence on the specimen of the type which I have. It seems hardly red enough to be designated as such. Staminate flowers and fruit are unknown.

The species at first glance appears to be a *Litsea,* but the very definitely caducous bracts place it in *Actinodaphne.*

10. **Actinodaphne** (?) **litseaefolia,** spec. nov.

Frutex ad 4 m. alta, ramulis teretibus striatis rubescentibus ex adpresse pubescentibus glabris, initio griseis demum brunneis. Folia alterna, elliptica vel oblanceolato-elliptica, acuta vel subacuminata, ad basin attenuate acuta, utrinque sub lente reticulata, 13–18 cm. longa, 5.5–7.5 cm. lata, supra glabra, pallide viridia, nitida (fide collectoris), subtus glaucescentia, pubescentia, penninervia, nervis 10–12 satis arcuatis, supra planis subtus elevatis brunneis, petiolis 10–15 mm. longis, ex pubescentibus glabrescentibus. Inflorescentia multiflora, subumbellata, axillaris, solitaria, brevipedunculata. Flores ♂ immaturi, corollae lobis 6, ellipticis extus pubescentibus intus glabris, staminibus 9, 6 interioribus biglandulosis, filamentis ad basin parce pubescentibus; flores ♀ ignoti. Fructus parvus (immaturus ?), oblongus, 5 mm. longus, 3 mm. latus, apiculatus, nigrescens, cupula adpresse pubescente 2 mm. longa 6 mm. lata, pedicello brevi crasso.

DISTRIBUTION: China (Hainan).

CHINA. HAINAN: *F. C. How 73626, 72705* (type, AA), *72550.*

A species that looks very like *Litsea Griffithiana* and *Litsea khasyana,* both from India, but has the ragged irregular cupule surrounding the fruit that is characteristic of *Actinodaphne.*

11. **Actinodaphne Tsaii** Hu, Bull. Fan Mem. Inst. Biol. **5:** 307. 1934: Hu in Hu & Chun, Ic. Pl. Sin. **4:** 9, pl. 159. 1935.

DISTRIBUTION: known only from type locality.

CHINA. YUNNAN: *H. T. Tsai 51907* (type, Fan Mem. Inst. Biol; isotype, AA).

A plant with slender branches and oblanceolate acuminate membranaceous leaves 10–12 cm. long, 2–3 cm. broad, penninerved at their apices. The species recalls *Actinodaphne sikkimensis* from India, but the veins of the latter are more numerous, and less conspicuous as well as less arcuate. Both plants have in common the long-exserted stamens of the ♂ flowers.

12. **Actinodaphne sesquipedalis** Hook. f. & Thoms. ex Meissn. in DC. Prodr. **15**^{1}: 216. 1864; Hook. f. Fl. Brit. Ind. **5**: 151. 1886; Gamble, Jour. As. Soc. Bengal, **75**^{2}: 113. 1912; Liou, Laurac. Chine Indoch. 158. 1932.

DISTRIBUTION: India and Indo-China?
INDIA. MERGUI: *W. Griffith* (type, Kew).

Except for the type of *Actinodaphne sesquipedalis,* I have seen no material of the species. Liou has recorded one specimen from Annam. It is an interesting plant, having coarse, long narrowly lanceolate, pubescent, penninerved leaves, verticillate, over 50 cm. long and 10 cm. broad. The inflorescence consists of numerous pedunculate umbels, which increase tremendously in size and coarseness in the fruiting stage. The fruit is globose.

12a. **Actinodaphne sesquipedalis** var. **cambodiana** Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 93. 1913; Fl. Gén. Indoch. **5**: 130. 1914.

DISTRIBUTION: known only from type locality.
FRENCH INDO-CHINA. CAMBODIA: *L. Pierre 627* (type, Paris).

The leaves of the variety are smaller and more pubescent than those of the species.

13. **Actinodaphne perlucida,** spec. nov.

Arbor 10 m. alta, ramulis teretibus pallide brunneis dense cano-tomentosis mox glabris lucidis. Folia in apice ramulorum verticillata, crasse coriacea, elliptica, abrupte acuta vel obtusa, 11–21 cm. longa, 4–9 cm. lata, primo tomentosa ut videtur, demum nonnisi ad marginem glabrescentia, sicca, supra nitida, sub lente minute reticulata, pubescentia praecipue in nervis, subtus obscure pallida, glabrescentia, penninervia, nervis 7–9-jugis erecto-arcuatis, supra planis subtus prominulis, plerumque nitidis, petiolis crassis, 1–2 cm. longis, 2–3 cm. latis, primo tomentosis mox glabris. Inflorescentia subumbellata, pauciflora, axillaris, solitaria, sessilis. Flores ♂ & ♀ ignoti. Fructus subglobosus, apiculatus, 6–7 mm. in diametro, nigrescens, glaber, cupula brevi irregulariter dentata pubescente, pedicello brevissimo incrassato.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 4590* (type, Paris; photo. and fragm., AA).

An extremely unusual species, placed rather hesitatingly in the genus *Actinodaphne,* because of the character of the cupule. Again, the species is based on fruiting material only, because it is so very distinct. The proper disposition of it cannot be ascertained until staminate specimens are collected. The large penninerved leaves, very darkly shining above and pale below, at once set the species apart. It is evident from the mature specimen that in an early stage the leaves were covered with a dense light tomentum for traces of it are still apparent, particularly on the leaf margins.

14. **Actinodaphne glaucina,** spec. nov.

Arbor ad 10 m. alta, ramulis teretibus striatis ferrugineis adpresse pubescentibus mox glabris, foliorum cicatricibus rotundis haud elevatis. Folia in apice ramulorum subverticillata, ex glabrescentibus glabra, an primo pubescentia, subcoriacea, longe lanceolata, 13–23 (28) cm. longa, 2.5–4 (8) cm. lata, ad apicem acuta vel subacuminata, ad basin attenuate acuta, sub lente supra minute reticulata, subtus ex pallide glaucescentia, penninervia, nervis plerumque 10-jugis subascendentibus flavis, supra conspicuis planis glabrescentibus subtus prominulis ex pubescentibus glabris, petiolis 12–20 mm. longis, ferrugineo-tomentosis. Inflorescentia subumbellata, axillaris, solitaria, pedunculata, pedunculis 2–6 mm. longis, adpresse pubescentibus. Flores ♂ et ♀ ignoti. Fructus globosus, 7–10 mm. latus, nigrescens, disco planiusculo adpresse pubescente, pedicello adpresse pubescente incrassato.

DISTRIBUTION: China (Hainan).

CHINA. HAINAN: Fan Yah, *N. K. Chun & C. L. Tso 44045* (type, AA); *F. C. How 72720* (sterile specimen).

As is frequently the case, the young sterile shoot has larger, coarser leaves, but their type, as well as the characteristic leaf scars, place it with this species. The nearest affinity is *Actinodaphne Henryi* Gamble. Again, more material may show this not to be an *Actinodaphne* but a *Litsea* or a *Neolitsea.* In the dried state this plant is easily distinguished by contrasting color of the leaf surfaces, the upper being a soft brown, the lower pale green and glaucescent.

15. **Actinodaphne omeiensis** (Liou), spec. nov.

Actinodaphne reticulata Meissn. var. *omeiensis* Liou, Laurac. Chine Indoch. 158. 1932.

DISTRIBUTION: China (Szechuan).

CHINA. SZECHUAN: *W. P. Fang 2448, 2386* (syntypes of *A. reticulata* var. *omeiensis*, Paris; isotypes, AA); *Y. Chen 7206* (syntype of *A. reticulata* var. *omeiensis* not seen, Paris); *F. T. Wang 23212, 23585d; T. T. Yü 402; W. P. Fang 3210.*

This has been raised to specific rank because of the fact that, aside from the leaf shape and its position on the stem, it has no resemblance to *A. reticulata* Meissn. The leaves are coarser, somewhat larger and entirely glabrous, with fewer veins arising from the midrib, salient below. The stem at maturity is maroon in color and glabrous. The fruiting inflorescence is composed of several umbels, consisting of subspherical black fruit about 15 mm. in diameter, very definitely apiculate, subtended by a shallow disc-like cupule, undulate in margin, less than 2 mm. deep, borne on a slender slightly enlarged pedicel, both cupule and pedicel being appressed-pubescent.

16. **Actinodaphne setchuenensis** (Gamble), comb. nov.

Lindera setchuenensis Gamble in Sargent, Pl. Wilson: **2**: 82. 1914; Liou, Laurac. Chine Indoch. 128. 1932.

Benzoin setchuenense Rehd. Jour. Arnold Arb. **1**: 145. 1919; Chun, Contr. Biol. Lab. Sci. Soc. China, 1^5: 47. 1925.

DISTRIBUTION: China (Szechuan).

CHINA. SZECHUAN: *E. H. Wilson 4586* (type, AA).

This species was described from a pistillate specimen only. Examination of the type collection shows that the fruit is subtended by a shallow cupule which very distinctly has the remains of the corolla and staminodes about its margin. The leaves are pseudoverticillate, linear-oblong, up to 20 cm. long, about 2.5 cm. broad, penninerved, shining above and pubescent below. The inflorescence consists of pedunculate umbels. The fruit is ovoid, 1 cm. long, subtended by a small irregular shallow cupule about 5 mm. long, borne on a very slender pedicel.

17. **Actinodaphne reticulata** Meissn. in DC. Prodr. **15**^{1}: 212. 1864; Hook. f. Fl. Brit. Ind. **5**: 147. 1886; Chun, Contr. Biol. Lab. Sci. Soc. China **1**^{5}: 53. 1925; Liou, Laurac. Chine Indoch. 158. 1932.

DISTRIBUTION: India and China?
INDIA. NEPAL: *Herb. Hooker f.* (type, Kew).

Although *Actinodaphne reticulata* Meissn. has been reported from China, the species proper in all probability does not occur there. It is characterized by pubescent verticillate leaves and branchlets. The leaves are very conspicuously reticulate, glabrous above, pubescent below, elliptic (oblong), penninerved and long-acuminate. The fruit is ovoid 10–12 mm. long, 7–8 mm. broad, subtended by a thin shallow cupule, and borne on a slender pedicel.

17a. **Actinodaphne reticulata** Meissn. var. **glabra** Meissn. in DC. Prodr. **15**^{1}: 213. 1864; Liou, Laurac. Chine Indoch. 158. 1932.

DISTRIBUTION: India and China.
INDIA. NEPAL?: *Herb. Hooker f.* (type not seen, Kew).

Liou lists this variety as occurring in Yunnan. Hooker f. in the 'Flora of British India' mentions the type of the variety as being a more mature specimen than the type of the species, hence more glabrous. I have seen no representative of the variety except the specimen from Khasya in the Hooker Herbarium, with a fruiting branch nearly as pubescent as the sterile shoot on the sheet beside it. The latter, however, has the remnants of long dark hairs on the under surface of the leaves in addition to the finer lighter pubescence. Although pubescence is at best a variable character and a weak one on which to base a variety, nevertheless, until more material is at hand, the variety will be retained.

17b. **Actinodaphne reticulata** Meissn. var. **Forrestii**, var. nov.

A typo manifeste differt foliis arcte elliptico-lanceolatis, subtus glaucescentibus nervis primo intuito adscendentibus nec arcuatis; indumento pilis adpressis longioribus; cupulis majoribus; pedicellis longioribus; perulis pubescentibus.

DISTRIBUTION: China (Yunnan).

CHINA. YUNNAN: *G. Forrest 18827* ♂ (type, AA), *16047, 17555, 9069; A. Henry 11436, 13323.*

A variety as yet known only from Yunnan, which shows its affinity for *A. reticulata,* but differs in having narrower, longer leaves, glaucous below and covered with light brown pilose pubescence in the young stages. Both characters may or may not persist through the fruiting stage. The branchlets and petioles are covered with a short-appressed dense pubescence, becoming glabrescent in the fruiting stage. The fruiting inflorescence of the variety is larger than that of the species. The fruit is oblong, apiculate, 14–16 mm. long and 6–8 mm. wide, subtended by a cupule 8–10 mm. deep, and borne on a pedicel 15 mm. long.

The variety is named for the late Mr. George Forrest, who collected extensively for a number of years in western China and Tibet.

18. **Actinodaphne Lecomtei,** spec. nov.

Litsea hupehana var. *longifolia* Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 88. 1913; Liou, Laurac. Chine Indoch. 179. 1932.

Actinodaphne reticulata sensu Gamble, in Sargent, Pl. Wilson. **2**: 75. 1914, non Meissn.

Arbor ad 10 m. alta, ramulis teretibus pubescentibus mox glabris. Folia subverticillata vel alternata, membranacea, lanceolata, 10–15 cm. longa, 14–26 mm. lata, acuta vel attenuate acuta, supra opaca, glabra, sub lente minute reticulata, subtus interdum glaucescentia, parce adpresseque pubescentia, sub lente minute reticulata, penninervia, costa valde prominente pallidiore, nervis numerosis supra subtusque inconspicuis, petiolis gracilibus, 7–13 mm. longis, ex adpresse pubescentibus glabris. Inflorescentia subumbellata, axillaris, subsessilis. Flores numerosi, circa 7 mm. longi, pedicello pubescente, 2–3 mm. longo, perianthii tubo brevi, lobis (4)–6, ellipticis laceratis extus pubescentibus subtus glabris. Flores ♂ staminibus 9 (vel pluribus), filamentis gracilibus; staminibus exterioribus 6, 6 mm. longis, interioribus 3.5 mm. longis biglandulosis, glandulis filamentis triplo minoribus breviter stipitatis, ad tertium inferum tubi adnatis; ovario rudimentali.

Flores ♀ ignoti. Fructus obovoideus, circa 7 mm. longus, 5 mm. latus, glaber, viridi-nigrescens, cupula 5 mm. longa, crenulata glabra rugulosa, pedicello 7–8 mm. longo, subincrassato.

DISTRIBUTION: western China.

CHINA. SZECHUAN: Mt. Omei, *E. H. Wilson* (Veitch Exped.) *4424* (type of *Litsea hupehana longifolia* Lecomte, Kew; isotype, AA); *E. H. Wilson* (Veitch Exped.) *5777; C. Wang 23250, 23658; P. Farges 1474.*—KWEICHOW: *W. Y. Chun 7052.*

DOUBTFUL SPECIES

Actinodaphne Hookeri Meissn. in DC. Prodr. **15**¹: 218. 1864; Hook. f. Fl. Brit. Ind. **5**: 149. 1886.

DISTRIBUTION: India and China?

INDIA: *Herb. Hooker f.* (type not seen, Kew).

CHINA. YUNNAN: *H. T. Tsai 61952?*

The Yunnan specimen fits the description in the larger sense. It is possible that the Yunnan material represents a variety of the species, and that *A. Hookeri* Meissn. is confined to India.

Actinodaphne pedunculata (Bl.) Meissn. in DC. Prodr. **15**¹: 211. 1864; Hemsl. Jour. Linn. Soc. Bot. **26**: 383. 1891.

Iozoste pedunculata Bl. Mus. Bot. Lugd.-Bat. **1**: 364. 1851.

CHINA: Blume (type of *Iozoste pedunculata* not seen, Leiden; photo., AA).

This species, to judge from the photograph, appears to be a *Machilus.* The species is difficult to determine without the actual material, but if it is *Machilus* it certainly belongs in the group with *Machilus velutina* Champ. and *M. Grijsii* Hance. Superficially it resembles *Actinodaphne magniflora* Allen.

EXCLUDED SPECIES AND VARIETIES

Actinodaphne chinensis Nees, Syst. Laurin. 600. 1836 = **Litsea rotundifolia** Hemsl. var. **oblongifolia** (Nees) Allen.

Actinodaphne chinensis Nees var. *oblongifolia* Nees, Syst. Laurin. 600. 1836 = **Litsea rotundifolia Hemsl.** var. **oblongifolia** (Nees) Allen.

Actinodaphne chinensis Nees var. *rotundifolia* Nees, Syst. Laurin. 600. 1836 = **Litsea rotundifolia** Hemsl.

Actinodaphne confertifolia (Hemsl.) Gamble in Sargent, Pl. Wilson. **2**: 74. 1914 = **Neolitsea confertifolia** (Hemsl.) Merr.

Actinodaphne hongkongensis Chun, Jour. Arnold Arb. **8**: 22. 1927 = **Neolitsea hongkongensis** (Chun) Allen.

Actinodaphne rotundifolia Merr. Lingnan Sci. Jour. **15**: 119. 1936 = **Litsea rotundifolia** Hemsl.

KEY TO THE SPECIES OF NEOLITSEA

1. Leaves penninerved.
  2. Leaf margins undulate; leaves narrowly lanceolate.
    3. Fruit subtended by a scarcely enlarged disc 2 mm. long; pedicel 4 mm. long; largest leaves up to 12 cm. long................1. *N. confertifolia*
    3. Fruit subtended by a shallow cupule 3 mm. deep, 5–6 mm. in diam.; pedicel 7–8 mm. long; largest leaves up to 9 cm. long...2. *N. undulatifolia*
  2. Leaf margins not undulate.
    3. Young branchlets and leaves ferrugineous-tomentose.
      4. Pubescence of leaf only on petiole and half-way up midrib; leaf oblong, never more than 2.3 cm. broad................3. *N. oblongifolia*
      4. Pubescence of leaf covering entire surface; leaf obovate, obovate-elliptic, never less than 3 cm. broad................4. *N. cambodiana*
        4a. Leaves glabrous, attenuate at base and apex, reticulate...4a. *N. cambodiana* var. *glabra*
    3. Young branchlets and leaves not ferrugineous-tomentose.
      4. Fruit ovoid; leaves subacuminate with obtuse acumen (Hongkong)..5. *N. hongkongensis*
      4. Fruit globose; leaves long-acute (Szechuan)............6. *N. wushanica*
1. Leaves triplinerved or obscurely triplinerved.
  2. Leaves obscurely triplinerved.
    3. Leaves caudate, pale; flowers borne in densely crowded subumbels..7. *N. homilantha*
    3. Leaves not caudate; flowers borne in more loosely arranged subumbels.
      4. Leaves glabrous, very coriaceous, extremely obtuse......8. *N. obtusifolia*
      4. Leaves brown-tomentose below, subcoriaceous, subacuminate with obtuse acumen.......................................9. *N. elaeocarpa*
  2. Leaves definitely triplinerved.
    3. Leaves covered below with dense golden or silvery sericeous pubescence.
      4. Leaves ovate-elliptic, obtuse to acute...................10. *N. Sieboldii*
      4. Leaves oblong-lanceolate, falcate-acuminate (Japan & eastern China)..11. *N. aurata*
        4a. Leaves glabrescent, pubescence colorless (western China)...................................11a. *N. aurata* var. *glabrescens*
    3. Leaves not covered below with dense golden or silvery sericeous pubescence.
      4. Largest leaves never less than 15 cm. long.
        5. Fruit spherical.
          6. Fruit 10 mm. in diam.; leaves oblong-lanceolate....12. *N. chinensis*
          6. Fruit 15–18 mm. in diam.; leaves ovate.........13. *N. kwangsiensis*
        5. Fruit ellipsoid.
          6. Inflorescence composed of peduncled subumbels; fruit subtended by the very slightly enlarged pedicel tip............14. *N. Levinei*
          6. Inflorescence composed of sessile subumbels; fruit subtended by shallow cupule 2–3 mm. long, 7–8 mm. in diam.......15. *N. Howii*
      4. Largest leaves not more than 13 cm. (occasionally 15 cm. in *N. Chuii)* long.

5. Lower leaf-surface grey-glaucous; veins, petioles and young branchlets ferrugineous tomentose......................16. *N. alongensis*
5. Lower leaf-surface often somewhat glaucous; veins, petioles and young branchlets not ferrugineous-tomentose.
  6. Fruit spherical or subspherical.
    7. Ovary pubescent..............................17. *N. Poilanei*
    7. Ovary glabrous.
      8. Leaves ovate to elliptic, obtuse, prominently reticulate; bark aromatic ....18. *N. Merrilliana*
      8. Leaves not ovate to elliptic, nor obtuse, not prominently reticulate; bark not aromatic.
        9. Fruiting pedicel 6–8 mm. long, surrounded by disc 3–4 mm. in diam............................19. *N. umbrosa*
        9. Fruiting pedicel shorter than 6–8 mm.; disc very small.
          10. Lowest pairs of nerves outstanding on lower surface, 2–3 pairs near tip of leaf almost imperceptible.
            11. Branchlets and petioles pubescent......20. *N. pulchella*
            11. Branchlets and petioles glabrous.................................25a. *N. phanerophlebia* f. *glabra*
          10. Lowest pairs of nerves hardly more prominent than others...............................21. *N. zeylanica*
          10a. Leaves more caudate.....21a. *N. zeylanica* var. *Fangii*
  6. Fruit elliptic.
    7. Ovary pubescent..............................17. *N. Poilanei*
    7. Ovary glabrous.
      8. Fruit not less than 15 mm. long; pedicels enlarged to nearly the diameter of the branchlets..............22. *N. ellipsoidea*
      8. Fruit not more than 8 mm. long; pedicels scarcely enlarged.
        9. Branchlets subverticillate..................23. *N. polycarpa*
        9. Branchlets not subverticillate.
          10. Branchlets and leaves entirely glabrous except for petioles.
            11. Largest leaves not less than 10 cm. long; petioles 20–30 mm. long.......................24. *N. Chuii*
            11. Largest leaves not more than 9 cm. long; petioles not more than 15 mm. long...24a. *N. Chuii* f. *annamensis*
          10. Branchlets, leaves and petioles pubescent.......................................25. *N. phanerophlebia*

1. **Neolitsea confertifolia** (Hemsl.) Merr. Lingnan Sci. Jour. 15: 419. 1936.

Actinodaphne confertifolia (Hemsl.) Gamble in Sargent, Pl. Wilson. **2**: 74. 1914; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 54. 1925; Liou, Laurac. Chine Indoch. 159. 1932.

Litsea confertifolia Hemsl. Jour. Linn. Soc. Bot. **26**: 379, pl. 7. 1891.

DISTRIBUTION: China.

CHINA. HUPEH: *A. Henry 3054, 6007, 7829, 7829A* (syntypes, Kew; isotypes, Gray), *1247, 2202, 2203* (syntypes not seen, Kew); *C. Silvestri 749, 751.*—KWANGTUNG: *C. L. Tso 21140, 20917.*—SZECHUAN: *A. Henry 7197* (syntype, Kew; isotype, Gray).

Most of the specimens of the above species are from central or western China. It is a distinctive species because of the undulate margins of the leaves; the latter are narrow lanceolate, less than 10 cm. long and 2 cm. broad, somewhat similar in appearance to *Neolitsea undulatifolia* (Lévl.) Allen. *Neolitsea confertifolia,* however, has larger, coarser leaves, which are glaucous below. The venation in the two species also differs.

2. **Neolitsea undulatifolia** (Lévl.) Allen, Jour. Arnold Arb. **17**: 328. 1936.

Litsea undulatifolia Lévl. Fl. Kouy-Tchéou, 220. 1914.
Neolitsea spec. Rehd. Jour. Arnold Arb. **10**: 193. 1929.

DISTRIBUTION: western China.

CHINA. KWEICHOW: *J. Cavalerie without number,* March 14, 1900 (holotype of *Litsea undulatifolia,* Edinb.; isotype, AA).—YUNNAN: *H. T. Tsai 62499.*

The leaves of the species are verticillate, small (less than 9 cm. long), narrowly elliptic with an undulate margin, penninerved, the midrib very prominent, with numerous pairs of more inconspicuous laterals.

The Tsai specimen recalls in its leaf characters *Neolitsea confertifolia* (Hemsl.) Merr. except for the fact that in the latter the leaves are glaucous beneath. The fruiting inflorescence of *N. undulatifolia* consists of sessile umbels. An individual fruit is borne on an enlarged pubescent pedicel which flares into a shallow, more or less crenulate, somewhat pubescent cupule. The fruit is ovoid-ellipsoid, black, approximately 12 × 8 mm., apiculate, rugose on drying. The young branchlets are appressed-pubescent.

3. **Neolitsea oblongifolia** Merr. & Chun, Sunyatsenia, **2**: 234, pl. 45. 1935.

DISTRIBUTION: China (Hainan).

CHINA. HAINAN: *N. K. Chun & C. L. Tso 44049* (type, NY; isotype, AA), *44337, 43891; F. C. How 73215; H. Y. Liang 63523, 63145, 62798; C. Wang 34692.*

A species easily recognized by its small, slender, pale green, oblong or oblong-lanceolate leaves, less than 10 cm. long and 2 cm. broad.

4. **Neolitsea cambodiana** Lecomte, Not. Syst. **2**: 335. 1913; Fl. Gén. Indoch. **5**: 143. 1914; Liou, Laurac. Chine Indoch. 143. 1932.

Neolitsea ferruginea Merr. Lingnan Sci. Jour. **7**: 305. 1929.

DISTRIBUTION: French Indo-China and China.

FRENCH INDO-CHINA. CAMBODIA: *L. Pierre 5154* (type of *Neolitsea cambodiana*, Paris).

CHINA. KWANGTUNG: *W. Y. Chun 5560* (type of *Neolitsea ferruginea*, NY; isotype, AA); *S. K. Lau 20338; C. L. Tso 21039; W. T. Tsang & K. C. Wong 14480, 14591.*—KIANGSI: *S. K. Lau 4457, 4818.*

The species is delimited by the dense ferrugineous tomentum on the young leaves and branchlets. This tomentum gradually disappears from the leaves with age, the under surface of the leaf blade showing glaucous, the veins being the last to lose their pubescence. There is a great deal of variation in the leaf characters of the species. *Chun 5552*, cited by Merrill in his original publication, has leaves which are more obovate than oblong-elliptic or lanceolate. In the specimen from Cambodia, they are lanceolate and more glaucous than in the Chinese material. In spite of this variation, however, there can be no doubt that these are conspecific.

4a. **Neolitsea cambodiana** Lecomte var. **glabra**, var. nov.

A typo differt ramulis adpresse pubescentibus, foliis magis attenuatis ad basin et in apice glabris concoloribus utrinque reticulatis, petiolis adpresse pubescentibus.

DISTRIBUTION: known only from type locality.

CHINA. KWANGTUNG: *W. T. Tsang 21646* (type, AA).

The salient difference between the variety and the species is found in the leaves; they are more attenuate at the base and apex; are concolorous, glabrous and everywhere reticulate.

5. **Neolitsea hongkongensis** (Chun), comb. nov.

Actinodaphne hongkongensis Chun, Jour. Arnold Arb. **8**: 22. 1927; Contr. Biol. Lab. Sci. Soc. China, 1^5: 54. 1925; Liou, Laurac. Chine Indoch. 160. 1932.

Actinodaphne angustifolia sensu Benth. Fl. Hongkong. 293. 1861, non Nees.

DISTRIBUTION: China (Kwangtung).

CHINA. KWANGTUNG: Hongkong, *C. Wilford?* (type of *Actinodaphne angustifolia* sensu Benth., non Nees, Kew; isotype, Gray?); *Herb. Hongkong 4633* (AA).

The species stands out on account of the oblong-lanceolate to elliptic leaves, heavily and coarsely reticulate (not subfoveolate) above and below, brown, glabrous above and very pale brown-pubescent below. The specimen from Gray, cited as possibly the isotype of *Actinodaphne angustifolia* of Bentham, is in fruit. It differs from *Actinodaphne angustifolia* of Nees in its smaller, oblong-lanceolate leaves not glaucous below, and the flat disc subtending the fruit. However, *Hongkong No. 4633,* which matches Wilford's specimen as to leaf structure and other characters, is a ♂ branch with the typical *Neolitsea* flower structure.

6. **Neolitsea wushanica** (Chun) Merr. Sunyatsenia, **3**: 250. 1937.

Litsea wushanica Chun, Jour. Arnold Arb. **9**: 153. 1928.

Litsea gracilipes Hemsl. Jour. Linn. Soc. Bot. **26**: 381. 1891, non Hook. f.; Chun, Contr. Biol. Lab. Sci. Soc. China, 1^{5}: 65. 1925.

Neolitsea gracilipes Liou, Laurac. Chine Indoch. 143, pl. 1932, syn. nov.

DISTRIBUTION: China.

CHINA. SZECHUAN: *A. Henry 7113, 7114* (syntypes, Kew; isotypes, Gray).—HUPEH: *A. Henry 2999* (syntype not seen, Kew).

The leaves of this species are 7 cm. or less in length and up to 2.5 cm. broad, elliptic, acute or subacuminate, very pointed at the apex, more or less acuminate at the base, penninerved, dull pale green above and glaucous below. The globose fruit (6–7 mm. in diam.) is borne on the branches in a subumbellate cluster, subtended by a shallow cupule and pedicel somewhat enlarged, their combined lengths nearly 1 cm. The latter gradually distends toward its apex so that the line of demarcation where it joins the cupule is scarcely perceptible.

7. **Neolitsea homilantha**, spec. nov.

Arbor vel frutex, . . . m. alta, glaber, ramulis teretibus striatis brunneis glabris, perulis brunneo-sericeis. Folia in apice ramulorum, subcoriacea, elliptica, 7–10 cm. longa, 2.5–4 cm. lata, subcaudata, ad basin acuta vel subrotundata, glabra, supra minute obscureque reticulata sub lente, pallide viridia,

subtus glauca, margine undulata, penninervia, triplinervia, nervis 4–6-jugis, nervis in jugo infimo oppositis, ad 1 cm. supra laminae basim confluentibus, reliquis subalternatis ad apicem laminae confertioribus flavis supra subtusque planis, petiolis 10–14 mm. longis, glabris rugosis. Inflorescentia subumbellata, conferta, multiflora, axillaris, subsessilis. Flores ♂ pedicello pubescente, 2 mm. longo, corolla 3–4 mm. longa, tubo brevissimo, lobis 4, ovatis extus pubescentibus intus glabris, staminibus 6, antheris magnis, filamentis leviter exsertis ad basin subpubescentibus, 2 interioribus bi-glandulosis, glandulis breviter stipitatis ad basin filamenti adnati. Flores ♀ minores, staminodiis, ovario ovoideo glabrescente, stylo brevi, stigmate sub lente papillis filiformibus instructo. Fructus ignotus.

DISTRIBUTION: China (Yunnan).

CHINA. YUNNAN: *G. Forrest 9524* (type, AA), *9540.*

An unusual feature is presented by the horizontal linear scars appearing on the new growth, which extend half-way the circumference of the twig. They occur between the bud-scale scars and the first leaves. Very possibly they are left by the leaves which are fugacious at an early age. The more logical interpretation, however, is that they represent scars left by bud-scales that are persistent during the elongation of the axis, since there seems to be no trace of the buds which are usually found in the axils of leaves.

8. **Neolitsea obtusifolia** Merr. Lingnan Sci. Jour. **14**: 6. 1935.

DISTRIBUTION: China (Hainan).

CHINA. HAINAN: *S. K. Lau 607* (type, NY; isotype, AA), *1316; C. Wang 34041, 34181, 34935, 36192; H. Y. Liang 63517, 66489.*

The distinctive feature of this species is the very stiff leathery appearance given by the oblong-oblanceolate or narrowly oblong-ovate leaves. This is a species similar to *N. elaeocarpa* from Indo-China, but with smaller and coarser leaves, which are smoother in texture and more obtuse. The pedicels in the fruiting stage are longer also.

9. **Neolitsea elaeocarpa** Liou, Laurac. Chine Indoch. 144. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 10980, 1151,* fruiting specimen (syntypes, Paris), *7126* (syntype, Paris; photo. and fragm., AA).

A species which has in common with *Neolitsea obtusifolia,* a semi-triplinerved condition and similar fruiting inflorescences. The young branchlets and the under surface of the leaves of *Neolitsea elaeocarpa* are brown-tomentose, the pubescence persisting on the veins past anthesis, and becoming glabrescent to glabrous at maturity. There is a resemblance between this species and the Indian variety *concolor* of *Litsea zeylanica,* which belongs under *Neolitsea.* The latter differs, however, in being glabrous throughout, and having longer and enlarged funnel-shaped pedicels ending in a flaring disc which supports the somewhat larger fruit. In spite of these differences there is a strong affinity between the two entities.

10. **Neolitsea Sieboldii** (O. Ktze.) Nakai, Bot. Mag. Tokyo, **41**: 520. 1927.

Litsea glauca Siebold, Verh. Bat. Genoot. **12**: 24. 1830, excl. synon.
Malapoenna Sieboldii O. Ktze. Rev. Gen. **2**: 572. 1891.
Tetradenia glauca (Sieb.) Matsumura, Ind. Pl. Jap. **2**^{2}: 140. 1912; Makino & Nemoto, Fl. Jap. 933. 1925; ed. 2. 374. 1931.
Neolitsea glauca (Sieb.) Koidz. Bot. Mag. Tokyo, **32**: 257. 1918, excl. synon.
Laurus glauca Liou, Laurac. Chine Indoch. 148. 1932, excl. synon.
For complete synonymy see Nakai, l. c.

DISTRIBUTION: Japan, Formosa, Korea and eastern China.

JAPAN: *Siebold* (type of *Litsea glauca,* Leiden?; isotype, Gray).

Nakai's new name was necessary, since *Laurus glauca* of Thunberg, the specimen on which the name was based, is a *Symplocos. Neolitsea Sieboldii* is a beautiful species with leaves varying in shape from ovate-obtuse to acute, the under surface covered with closely appressed silky pubescence, silvery tawny or orange-brown. In these respects it resembles *Neolitsea aurata* (Hay.) Merr., the latter, however, having oblong-lanceolate acuminate leaves. *Laurus glauca* as then interpreted by Siebold must be considered the type of Siebold's species. The material I have seen of the species exclusive of China seems to contain a mixture. A more complete study of the Japanese flora is necessary before it can be said definitely what other elements are included. The specimens from China are uniform, however, and match Siebold's type.

11. **Neolitsea aurata** (Hay.) Merr. Lingnaam Agr. Rev. **4**: 124. 1927.

Litsea aurata Hay. Jour. Coll. Sci. Tokyo, **30**: 246 (Mater. Fl. Formosa). 1911.
Tetradenia aurata Hay. Ic. Pl. Formos. **3**: 167. 1913; **5**: 174, fig. 61c & c'. 1915.

DISTRIBUTION: Formosa and China.

FORMOSA. *K. Miyake*, in Nov. 1899; *G. Nakahara 1045* (syntypes not seen, Taihoku?).

CHINA. KWANGTUNG: *To & Ts'ang 12519; S. K. Lau 2744; S. S. Sin 11513.*—CHEKIANG: *R. C. Ching 2500.*

The species is characterized by the triplinerved oblong-lanceolate leaves, falcate-acuminate, densely reddish or golden brown-pubescent on the lower surface. Merrill has made this combination from a named specimen from Formosa. Undoubtedly, *Litsea aurata* is a *Neolitsea.* However, *No. 12519,* which Merrill cites as the Chinese representative, does not entirely agree with Hayata's description, the inflorescence not being typical, and the leaf-tips being definitely acuminate, falcate and smaller.

11a. **Neolitsea aurata** (Hay.) Merr. var. **glabrescens** Liou, Laurac. Chine Indoch. 149. 1932.

DISTRIBUTION: western China.

CHINA. SZECHUAN: *W. P. Fang 1315, 5640* (syntypes, Paris; isotypes, AA).

The variety shows a close relation to the species, differing only in the glabrescent branchlets and the slightly less pubescent under surface of the leaves. The color of the pubescence is less aureous and more tawny.

12. **Neolitsea chinensis** Chun, Contr. Biol. Lab. Sci. Soc. China, 1^5: 68. 1925; Liou, Laurac. Chine Indoch. 149. 1932.

Neolitsea lanuginosa Gamble var. *chinensis* Gamble in Sargent, Pl. Wilson. **2**: 79. 1914.

DISTRIBUTION: western China.

CHINA. SZECHUAN: *E. H. Wilson 3707* (type, AA); *Veitch Exped. 2266* (syntype not seen, Kew).

This species with large (up to 20 cm.) leaves, triplinerved, oblong-lanceolate, and coriaceous, is very similar to *N. Levinei* Merr. but is easily distinguished by its globose fruit.

13. **Neolitsea kwangsiensis** Liou, Laurac. Chine Indoch. 146. 1932.

DISTRIBUTION: known only from type locality.

CHINA. KWANGSI: *R. C. Ching 7043, 7017* (syntypes, NY).

A striking species on account of the large, ovate or obovate-oblong, glabrous leaves up to 20 cm. long and 10 cm. broad, triplinerved, with conspicuous parallel transverse veins. The long petioles (up to 4 cm.) also add an unusual feature, as well as the large spherical fruit (1.5–1.8 cm. in diam.).

14. **Neolitsea Levinei** Merr. Philip. Jour. Sci. Bot. **13**: 138. 1918; Groff, Lingnan Univ. Sci. Bull. No. **2**: 48. 1930.

Benzoin Levinei (Merr.) Chun ex Liou, Laurac. Chine Indoch. 148. 1932, pro synon.

DISTRIBUTION: China (Kwangtung and Kiangsi).

CHINA. KWANGTUNG: *E. D. Merrill 11071* (type not seen, Herb. Manila); *C. O. Levine 1332* (syntype, Herb. Manila, isotype, AA); *W. T. Tsang 20938, 21498*; *S. K. Lau 975*.—KIANGSI: *S. K. Lau 4545, 5130.*

This species is easily recognized by its extremely large, obovate-elliptic leaves 25–30 cm. long and up to 9 cm. broad. Liou included this species under *Neolitsea lanuginosa* (Nees) Gamble. The latter, however, has glabrous branchlets, smaller leaves less glaucous on the lower surface; the veins are less conspicuous above, showing as a mere thread, and are more pubescent below, the transverse venation being inconspicuous; the fruits are borne on more slender pedicels. For these reasons, it has seemed advisable to keep the Chinese species apart from the Indian.

The place of the species in *Neolitsea* is not at all assured. The leaves, as Merrill states, are unusually large for the genus, and it is more probable that the plant belongs to *Lindera*. Until ♂ flowers are found it will be left in *Neolitsea*.

15. **Neolitsea Howii,** spec. nov.

Arbor vel frutex . . . m. altus, ramulis teretibus pallide brunneis adpresse pubescentibus canescentibus. Folia in apice ramulorum, coriacea, obovata, 9.5–18 cm. longa, 3.5–7 cm. lata, in acumen abrupte producta, ad basin acuta, supra subtusque sub lente minute reticulata, pallide viridia, glabra, subtus glauca, glabrescentia, triplinervia, nervis in jugo infimo oppositis, ad 1 cm. supra laminae basim confluentibus, reliquis subalternatis ad apicem laminae confertioribus, nervis flavis subtus magis prominentibus quam supra, subtus pubescentibus, nervulis e primo jugo ortis 6–8 arcuatis, ad marginem laminae excurrentibus, petiolis 1–1.5 cm. longis crassis rugosis adpresse pubescentibus. Inflorescentia subumbellata, ad 7-flora, axillaris, sessilis. Flores ♂ et ♀ ignoti. Fructus ellipsoideus, 12 mm. longus, 9 mm. latus, pallide brunneus, glaber, breviter apiculatus, cupula 2–3(4) mm. longa, 7–8 mm. lata, extus rugosa intus pubescente, pedicello 4–5 mm. longo, crasso rugoso.

DISTRIBUTION: China (Hainan).

CHINA. HAINAN: Po-ting, *F. C. How 73402* (type, AA).

The species is distinguished by the large obovate glaucescent leaves and the greyish pubescence of the branchlets. The umbels in fruiting stage show in the center a small undeveloped bud with light, very closely appressed pubescence.

The species is named after the collector of the type specimen.

16. **Neolitsea alongensis** Lecomte, Fl. Gén. Indoch. **5**: 143. 1914; Liou, Laurac. Chine Indoch. 147. 1932.

DISTRIBUTION: French Indo-China.

FRENCH INDO-CHINA. TONKIN: *H. Lecomte & A. Finet 819* (type, Paris).—ANNAM: *E. Poilane 24564.*

The leaves of this species are broadly elliptic or oblong elliptic-obovate, abruptly and very sharply acuminate, coriaceous, triplinerved at base, minutely reticulate, glaucous below and glabrescent on the veins. The difference between the new shoots and the branches of the previous year is so striking

in this species as to deserve comment, since the branches of the type are not young shoots. On the new growth the branches and the surface of the leaves are covered with a light red-brown tomentum, the veins being the last to lose their pubescence on approaching maturity. On the older branches the pubescence has become darker brown, shorter and more closely appressed.

17. **Neolitsea Poilanei** Liou, Laurac. Chine Indoch. 149. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 18416* (type, Paris).

The species is unusual in the pubescence of the ovary and staminodia, and the presence of large elongated sacs at the base of the glands on the two innermost staminodia. Liou draws attention to the resemblance of this species to *Neolitsea pulchella.* Except for the leaves being of much finer texture, vegetatively *N. Poilanei* is similar to *N. Chuii.*

18. **Neolitsea Merrilliana,** spec. nov.

Neolitsea zeylanica Merr. var. *obovata* Liou, Laurac. Chine Indoch. 153. 1932.

Arbor parva, ramulis teretibus striatis saepe nodulosis brunneis. Folia in apice ramulorum, coriacea, elliptica, 5–7 cm. longa, 2.2–3.5 cm. lata, subacuta, obtusa vel abrupte acuminata, acumine obtuso, ad basin acuta, concoloria, glabra, supra subtusque conspicue reticulata, triplinervia, nervis in jugo infimo oppositis, ad 0.5 cm. supra laminae basim confluentibus, reliquis subalternatis ad apicem laminae confertioribus, petiolis 5–10 mm. longis rugosis, maturis glabris. Inflorescentia subumbellata, axillaris, solitaria, subsessilis. Flores pedicello 2–3 mm. longo, sericeo-pubescente, corolla 6 mm. longa, perianthii tubo brevissimo, lobis 4, ellipticis ciliatis extus pubescentibus intus glabris. Flores ♂ subexserti, staminibus 6, 2 interioribus biglandulosis, glandulis ad basin adnatis subsessilibus, filamentis glabris ad basin pilis penicillatim dispositis; ovario rudimentali. Flores ♀ minores, ovario ovoideo, stigmate patente. Fructus globosus, 6–7 mm. latus, longe apiculatus, rugosus, brunneus, disco minimo plano; pedicello incrassato glabrescente, 5–6 mm. longo.

Distribution: French Indo-China.

French Indo-China. ANNAM: *J. & M. S. Clemens 4225* (type, AA); *A. Chevalier 41202; E. Poilane 7091, 8731* (syntype of *N. zeylanica obovata* not seen, Paris), *5905* (syntype of *N. zeylanica obovata,* Paris; photo., AA), *5935, 5977* (syntype, Paris).—CAMBODIA: *A. Chevalier 35996* (less conspicuous reticulation of leaves).

The variety has been transferred to the species with the attending description, because it fits into a series with the rest of the specimens cited above. The name *obovata* has not been kept because it is not entirely applicable. *Neolitsea Merrilliana* has been placed under *Lindera Myrrha* (Lour.) Merr. and under *Cinnamomum,* presumably because of the very fragrant bark. It differs from the latter, however, in its nearly sessile umbellate inflorescence, and its flower structure. Just what *Lindera Myrrha* is, it is difficult to state with finality, there being no specimen extant of Loureiro's species. Except for the mention of nine stamens in the original description, *Neolitsea Merrilliana* corresponds very well to *Lindera Myrrha.* In fact, Chevalier's specimen was previously determined as the latter. There is a resemblance to several other species of *Neolitsea,* among them *N. elaeocarpa,* from which it is easily distinguished by the broader more obtuse leaves; and also *N. scrobiculata* from India, which has larger and more acuminate leaves.

It is a pleasure to name this species for Dr. E. D. Merrill, Director of the Arnold Arboretum, who for many years has been a keen student of plants of the Orient.

19. **Neolitsea umbrosa** (Wall.) Gamble in Sargent, Pl. Wilson. **2**: 79. 1914; Liou, Laurac. Chine Indoch. 151. 1932.

Tetranthera umbrosa Wall. List No. 2564. 1830, nomen nudum.

Tetradenia umbrosa Nees in Wall. Pl. As. Rar. **2**: 64. 1831, excl. var. β (based on *Tetranthera umbrosa* Wall.).

Tetradenia consimilis Nees, l. c.

Litsea umbrosa Nees, Syst. Laurin. 623. 1836.

Litsea consimilis Nees, l. c. 628 (excl. syn. *Laurus involucrata* Roxb.).

Distribution: India (and reported from China).

India. SILHET: *N. Wallich 2564* (isotype of *Tetranthera umbrosa,* Kew, see footnote p. 370); *N. Wallich 2567B* (isotype of *Tetradenia consimilis* not seen, Kew?).

From the material I have seen of *Litsea consimilis,* compared with the type of *N. umbrosa,* the two seem to be distinct species.

The former has larger oblong leaves, more numerous pairs of veins more or less equidistant, the first pair giving the appearance of triplinerves, are stronger and longer than the rest. This is a characteristic of *Laurus involucrata,* which I feel is a synonym of *Litsea consimilis.*

There are no specimens from China which correspond to *Neolitsea umbrosa,* but numerous specimens answering the description of *Litsea consimilis* in eastern China.

Although I feel that these are distinct, I shall avoid making a new combination under *Neolitsea,* but shall keep the synonyms as given above until such time as the type of *L. consimilis* is available.

20. **Neolitsea pulchella** (Meissn.) Merr. Philip. Jour. Sci. Bot. Bot. **13**: 137. 1918; Chun, Contr. Biol. Lab. Sci. Soc. China, **1**^{5}: 67. 1925; Liou. Laurac. Chine Indoch. 150. 1932.

Litsea pulchella Meissn. in DC. Prodr. **15**^{1}: 224. 1864.
Litsea Zeylanica var. *Chinensis* Benth. in Hook. f. Jour. Kew Gard. Miscel. **5**: 199. 1853.

DISTRIBUTION: China (Kwangtung).

CHINA. KWANGTUNG: *J. G. Champion 162* (type of *Litsea pulchella,* Kew?); *J. G. Champion* (type of *Litsea zeylanica* var. *chinensis,* Kew?).

The species has been for many years confused with *N. zeylanica,* from which it is readily distinguished by its smaller leaves, 5 or often 6 cm. long, elliptic, acuminate and much more symmetrical than those of *N. zeylanica.* The nerves of *N. pulchella* are inconspicuous above as compared with those of *N. zeylanica.*

21. **Neolitsea zeylanica** (Nees) Merr. Philip. Jour. Sci. Suppl: 57. 1906; Lecomte, Nouv. Arch. Mus. Hist. Nat. Paris, sér. V. **5**: 94. 1913; Fl. Gén. Indoch. **5**: 142. 1914; Liou, Laurac. Chine Indoch. 152. 1932.

Litsea zeylanica Nees, Amoen. Bot. Bonn. fasc. **1**: 58, pl. 5 (Cinn. Disput.). 1823; Bl. Bijdr. 559. 1825; Nees, Syst. Laurin. 626. 1836; Wight, Icon. Pl. **1**: pl. 132. 1839; Bl. Mus. Bot. Lugd.-Bat. **1**: 346. 1851.
Tetradenia zeylanica Nees in Wall. Pl. As. Rar. **2**: 64. 1831; **3**: 30. 1832.

DISTRIBUTION: southern Asia through Malaya to Australia.

CEYLON: (type, Herb. Royeni, not seen, Leiden?).

The plant has oblong or elliptic leaves attenuate at the apex, with an obtuse acumen, glaucous below, the costa, petioles and new branchlets yellowish sericeous and very densely appressed tomentose.

21a. **Neolitsea zeylanica** (Nees) Merr. var. **Fangii** Liou, Laurac. Chine Indoch. 154. 1932.

Distribution: China (Szechuan).
China. Szechuan: *W. P. Fang 5775* (type, Paris; isotype, AA).

The variety is distinguished from the species proper by the slightly pedunculate inflorescence, and the stamens being variable in number (6–8). Liou suggests that because of the variable number of the stamens the variety is a connecting link between *Neolitsea* and *Litsea*. The flowers which I examined all had six fertile stamens.

22. **Neolitsea ellipsoidea**, spec. nov.

Arbor ad 30 m. alta, ramulis teretibus rugosis glabris primo flavescenti-brunneis. Folia in apice ramulorum, coriacea, elliptica vel late elliptica, 6–10 cm. longa, 2–4.5 cm. lata, acuta vel obtusa, acuminata, ad basin acuta, concoloria, glabra, minute plus minusve reticulata sub lente. Folia triplinervia, nervis in jugo infimo oppositis, ad 1 cm. supra laminae basim confluentibus, reliquis subalternatis ad apicem laminae confertioribus supra subtusque flavescentibus prominulis, petiolis 2–3 cm. longis, glabris flavis longitudinaliter rugosis. Inflorescentia umbellata, 2–5-flora, solitaria, breviter pedunculata, pedunculis 1–2 mm. longis, glabris. Flores pedicello ferrugineo-pubescente 3–4 mm. longo, corolla 4–5 mm. longa, perianthii tubo perbrevi, lobis 4, ellipticis ciliatis extus pubescentibus intus glabris; flores ♂ staminibus 6, filamentis pubescentibus. Flores ♀ parvi, staminodiis circiter 6, ovario ovoideo glabro, stigmate discoideo. Fructus ellipsoideus, 15–17 mm. longus, 10–12 mm. latus, brunneus, glaber, disco parvo plano, pedicello percrasso 8 mm. longo 2 mm. lato.

Distribution: China (Hainan).
China. Hainan: *N. K. Chun & C. L. Tso 44131* (type, AA); *F. C. How 73420; H. Y. Liang 63482; N. K. Chun & C. L. Tso 44163; C. Wang 34652, 35857.*

A very unusual species as to petioles and branchlets which are rugose and yellowish brown. In fruit, the pedicels are much more thickened than normally is the case in *Neolitsea,* and are elongated. The appearance of the fruiting branch as a result is clumsy.

23. **Neolitsea polycarpa** Liou, Laurac. Chine Indoch. 150. 1932.

DISTRIBUTION: French Indo-China.
FRENCH INDO-CHINA. TONKIN: *E. Poilane 13093.*—ANNAM: *E. Poilane 11025.*

The species is characterized by elliptic, very long-acuminate, rather coriaceous leaves 11 × 3.5 cm., glaucous below. The branches are subverticillate, an unusual feature to be noted on an herbarium sheet. The species is similar to *N. zeylanica* (Nees) Merr. but is distinguished from the latter by the above characters. Only the fruiting inflorescence and young female flowers have been described. Liou places the plant in *Neolitsea* because of the floral structure. Staminate material may change this conception.

24. **Neolitsea Chuii** Merr. Lingnan Sci. Jour. **7**: 306. 1929; Liou, Laurac. Chine Indoch. 147. 1932.

> *Neolitsea subfoveolata* Merr. Lingnan Sci. Jour. **7**: 306. 1929, in nota; Merr. apud Groff, Lingnan Univ. Sci. Bull. No. 2: 48. 1930, *nomen nudum;* Metc. Lingnan Sci. Jour. **14**: 525. 1935.

DISTRIBUTION: China.
CHINA. KWANGTUNG: *W. T. Tsang & F. Wong 14799* (type of *Neolitsea Chuii,* NY); *W. T. Tsang 20193; F. A. McClure 13756* (type of *N. subfoveolata* not seen, NY?); *W. Y. Chun 5744; S. P. Ko 50087, 50091, 50249; T. M. Tsui 769; S. S. Sin 11880.*—KIANGSI: *S. K. Lau 4696.*—KWANGSI: *R. C. Ching 8229.*

The species is characterized by its coarse triplinerved, elliptic to oblong-elliptic to ovate-elliptic leaves, minutely reticulate on both surfaces. The plant is glabrous throughout except for the inflorescence. No staminate specimen as yet has been reported but it is undoubtedly a *Neolitsea.* The specimen collected by Chun has been misdetermined several times, hence it is included above. Metcalf has seen the types or isotypes of *Neolitsea Chuii,* and *N. phanerophlebia* (from which Merrill, l.c. distinguishes *N. subfoveolata)* as well as *McClure no. 13756* cited by Groff as *N. subfoveolata* Merr. Thus his interpretation is without doubt correct, and should be accepted. The specimens collected by Tsai *(51693, 51551, 51676, 51718)*, and determined by Hu as *N. Chuii,* perhaps should be treated as a western variety of that species, since there are apparent differences between these and the plants from Kwangtung. For the present it is best that they remain under the species.

24a. **Neolitsea Chuii** Merr. f. **annamensis** Liou, Laurac. Chine Indoch. 147. 1932.

DISTRIBUTION: known only from type locality.

FRENCH INDO-CHINA. ANNAM: *E. Poilane 1142* (type, Paris).

The leaves of this form are smaller, have shorter petioles and more apparent transverse veins.

25. **Neolitsea phanerophlebia** Merr. Lingnan Sci. Jour. **7**: 305. 1929; Liou, Laurac. Chine Indoch. 149. 1932.

DISTRIBUTION: China (Kwangtung).

CHINA. KWANGTUNG: *K. P. To, W. T. Tsang & U. K. Tsang 12515* (type, NY); *T. M. Tsui 740, 822; W. T. Tsang 21230.*

The species suggests *N. Chuii* Merr., but it differs in the presence of an indumentum on the leaves, branchlets and petioles, the leaves being more glaucous beneath and distinctly appressed-pilose with scattered hairs. Merrill gives the lack of subfoveolate leaves as another distinction, but I can see no difference in the reticulation of the two species.

25a. **Neolitsea phanerophlebia** Merr. f. **glabra** Liou, Laurac. Chine Indoch. 149. 1932.

DISTRIBUTION: China (Kwangtung and Kiangsi).

CHINA. KWANGTUNG: *C. Wang 3221* (type, NY); *N. K. Chun & C. L. Tso 44294.*—KIANGSI: *S. K. Lau 3981, 4423, 4820.*

This is a very striking plant, first because of its small leaves glaucous beneath, and second because the two basal lateral veins are so prominent as to appear triplinerved. They branch off from the midrib 1–2 mm. above the base and follow the outline of the leaf, about 1–2 mm. from the margin, up to the middle of the leaf. Numerous specimens have been labeled as the variety *glabra,* but they are the new species *N. Merrilliana* Allen.

EXCLUDED SPECIES

Neolitsea Playfairii (Hemsl.) Chun, Contr. Biol. Lab. Sci. Soc. China, 1^5: 66. 1925 = **Lindera Playfairii** (Hemsl.) comb. nov., see p. 400.

Neolitsea subcaudata Merr. Philip. Jour. Sci. Bot. **13:** 137. 1918 = **Lindera subcaudata** (Merr.) Merr.

Neolitsea spec. Rehd. Jour. Arnold Arb. **10:** 193. 1929 = **Litsea Kobuskiana** Allen, nom. nov.

Neolitsea spec. Rehd. l.c. = **Litsea Dunniana** Lévl.

INDEX

Synonyms are printed in *italics;* new names in **bold-face type.**

Page

- Actinodaphne 400
  - *angustifolia* 418
  - *chinensis* 386, 414
    - var. *oblongifolia* 386, 414
    - var. *rotundifolia* 385, 414
  - *cochinchinensis* 404
  - confertiflora 400, 401
  - *confertifolia* 414, 416
  - cupularis 399, 405
  - ferruginea 407
  - **glaucina** 410
  - Henryi 407
  - *hongkongensis* 414, 418
  - Hookeri 414
  - lancifolia 406
    - var. **sinensis** 406
  - **Lecomtei** 399, 413
  - **litseaefolia** 408
  - **magniflora** 403
  - obovata 399, 404
  - **omeiensis** 411
  - pedunculata 414
  - **perlucida** 409
  - pilosa 404
  - reticulata 412
    - var. **Forrestii** 412
    - var. glabra 412
    - var. *omeiensis* 411
  - *reticulata* 413
  - *rotundifolia* 385, 414

Page

  - sesquipedalis 409
    - var. cambodiana 409
  - **setchenensis** 411
  - **trichocarpa** 402
  - Tsaii 408
- *Benzoin*
  - *fruticosum* 399
  - *Levinei* 423
  - *obovatum* 367
  - *puberulum* 370
  - *setchuenensis* 411
- *Cylicodaphne longipes* 379
- *Daphnidium*
  - *elongatum* 390
  - *lancifolium* 406
- *Eurya Esquirolii* 389
- *Hexanthus umbellatus* 396
- *Iozoste*
  - *chinensis* 386
    - var. *rotundifolia* 385
  - *lancifolia* 406
  - *pedunculata* 414
  - *rotundifolia* 385
    - var. *oblongifolia* 386
- Laurus
  - *Cubeba* 368
  - *obovata* 405
  - *pilosa* 404
  - *rotundifolia* 385
- Lindera
  - communis 399

Page
Esquirolii 369
fruticosa 399
megaphylla f. touyunensis 400
obovata 367
Playfairii 400, 431
populifolia 367
puberula 370
setchuenensis 411
subcaudata 431
Litsea 362
acutivena 389
amara 396
aurata 398, 422
auriculata 366
Balansae 396
baviensis 376
var. **szemaoïs** 377
var. *venulosa* 378
brevipetiolata 373, 374
brideliifolia 385
cambodiana 383
var. longiracemosa 383
var. multiracemosa 383
Cavaleriei 398
Chaffanjoni 398
chartacea 377
var. **subtriplinervis** 378
Chenii 372
chinensis 386
Chunii 372
citrata 368
Clemensii 376
confertifolia 399, 416
consimilis 399, 426
coreana 399
Cubeba 368
cupularis 399, 405
Dunniana 391, 431
Eberhardtii 378
var. *subtriplinervis* 378
elongata 390
var. cuneifolia.............. 391
Esquirolii 389, 399
eugenioides 380
euosma 368
Faberi 390
var. *ganchouensis* 389

Page
firma austrannamensis 387
Forrestii 369
fruticosa 399
Garrettii 388
var. longistaminata 388
glauca 399, 421
glutinosa 384
var. brideliifolia 385
gracilipes 399, 419
grandifolia 375
Greenmaniana 394
Griffithii annamensis 375
Helferi laosensis 379
hexantha 396
honghoensis 375
hupehana 391
var. *longifolia* 399, 413
ichangensis 371
iteodaphne 391
f. chinensis 393
Kobuskiana 389, 431
lancifolia 395
var. pedicellata 396
lancifolia 406
lancilimba 379
laxiflora 399
Liyuyingi 380
longipes 379
longepetiolata 367
Maclurei 376
Mairei 399
mekongensis 392
mollifolia 367
var. *glabrata* 369
mollis 367
var. *glabrata* 369
monopetala 387
moupinensis 370
multiumbellata 373
f. *annamensis* 373
myricopsis 399
obovata 399, 405
Panamonja 380
Pierrei 382
var. **grandifolia** 382
var. **lobata** 382
var. *szemaoïs* 377

Page

- *Playfairii* 400
- *polyantha* 387, 397
  - f. *glabra* 398
- populifolia 367
- pseudoelongata 384
- *pulchella* 400, 427
- pungens 371
- **Rehderiana** 381
- rotundifolia 385, 414
  - var. **oblongifolia** 386, 414
- rubescens 372
  - var. tonkinensis 373
  - var. yunnanensis 372
- salicifolia 397
  - f. attenuata 397
  - f. **glabra** 398
- *Sebifera* 384
  - var. *brachyphylla* 385
- sericea 369
- *shweliensis* 400, 401
- Thorelii 384
- *touyunensis* 400
- umbellata 396
- *umbrosa* 400, 426
- *undulatifolia* 400, 417
- *Vang* 382
  - var. *grandifolia* 382
  - var. *lobata* 382
- variabilis 393
  - var. oblonga 393
  - var. *tonkinensis* 393
- Veitchiana 370
- verticillata 373
  - f. **annamensis** 373
  - var. brevipes 374
  - var. **brevipetiolata** 374
- viridis 391
  - var. Clemensii 391
- *wenshanensis* 375
- Wilsonii 388
- *wushanica* 400, 419
- *zeylanica* 400, 427
  - var. *chinensis* 400, 427

Machilus
- *hainanensis* 404
- *pilosa* 404
- Thunbergii 399

Page

Malapoenna Sieboldii 421

Myrica
- adenophora 399
- esculenta 399

Neolitsea 415
- alongensis 424
- aurata 398, 422
  - var. glabrescens 422
- cambodiana 418
  - var. **glabra** 418
- chinensis 422
- Chuii 429
  - f. annamensis 430
- confertifolia 399, 414, 416
- elaeocarpa 421
- **ellipsoidea** 428
- *ferruginea* 418
- *glauca* 421
- *gracilipes* 419
- **homilantha** 419
- **hongkongensis** 414, 418
- **Howii** 424
- kwangsiensis 423
- *lanuginosa chinensis* 422
- Levinei 423
- **Merilliana** 425
- oblongifolia 417
- obtusifolia 420
- phanerophlebia 430
  - f. glabra 430
- *Playfairii* 400, 431
- Poilanei 425
- polycarpa 429
- pulchella 400, 427
- Sieboldii 399, 421
- *subcaudata* 431
- *subfoveolata* 429
- umbrosa 399, 400, 425
- undulatifolia 400, 417
- wushanica 399, 400, 419
- zeylanica 400, 427
  - var. Fangii 428
  - var. *obovata* 425

Sassafras Tzumu 399

Sebifera glutinosa 384

Symplocos stellaris 398

	Page
Tetradenia aurata	422
brideliifolia	385
consimilis	426
glauca	421
obovata	405
umbrosa	426
zeylanica	427
Tetranthera	
amara	396
attenuata	397
chartacea	378
elongata	390
ferruginea	396
glauca attenuata	397
iteodaphne	391
lanceofolia	395
lancifolia	395
macrophylla	387
monopetala	387
obovata	405
Panamanja	381
Panamonja	381
pilosa	404
polyantha	387
rotundifolia	385
salicifolia	397
sericea	369
umbrosa	426